Telephony.

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H. B. McMEAL, President and Editor
J. R. Hastie, Advertising Manager
H. D. FARGO, Secretary and Treasurer
S. R. EDWARDS, Technical Editor
W. E. Raymond, Subscription Manager

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INTERRUPTIONS IN THE DAY'S WORK.

So long as there is work to do, there will be interruptions—breaks in its progress—and it is a part of one's character growth to bear these timely or untimely interruptions without any break in good temper or courtesy.

It's in the Blood.

"There," said the chief operator of one of the large city exchanges, as she indicated an operator, "is a girl who only a short time ago, distinguished herself by a fine exhibition of self control. Her home caught fire one night and she was immediately notified. She called the fire department and then, instead of leaving her duty, stayed at the board until relieved at 7 o'clock in the morning. There were nothing but ashes and the chimney on the spot where her home was, when she reached there. That is typical of the spirit of our operators."

Countless instances have been related of the self control and bravery of American telephone operators under trying conditions. Stories of floods, tornadoes, war, fires, burglaries and even murders, in which telephone operators have been of inestimable service in the saving of life and property, have been related time and again. The American telephone girl has an enviable record. Brilliant performances under the most trying circumstances seem to be a characteristic of the calling.

In this country, we have heard much of the inefficiency of the European government telephone systems and many times the operators have been the target of the criticisms. The operators of the French exchanges, especially, have been spoken of in disparaging terms. But the cable, last week, told of one who exhibited the same spirit which has been so frequently shown by her American sisters.

The most remarkable censorship ever established in the world's history has been so effective that little authentic news of the European struggle comes over the cables to this country. The heroism of a French telephone operator at Etain is the feature of one dispatch which passed the rigidity of the censorship.

The village of Etain, France, was last week subjected to two bombardments by the German forces. The telephone service of the village was left in the hands of a young girl, who stuck to her post while shells were bursting all around the telephone office. Every 15 minutes after the bombardment started, she called up Verdun to give an account of what was going on. The director of posts at Verdun was listening to a message being given by this girl when suddenly she interrupted her communication to say:

"A bomb has just fallen in this office."

This ended the conversation and the dispatches give no further information as to her fate or her name. This incident, however, is sufficient to indicate that when the emergency comes, the telephone girl, no matter what her country or location, rises to it. She does her full duty and then a little bit more. It is in the blood.

War News by Telephone in London.

In connection with the giving out of war news in England, an interesting difference between American and English methods is displayed. In this country, the newspapers and, on special occasions the telephone offices, give out information free to all who call for it by telephone. In the offices of many American newspapers, special telephone operators are employed to answer the inquiries of the public concerning important events. This service is furnished alike to all; whether or not the inquirer be a subscriber to the paper makes no difference.

How different is the custom in England! The London dailies, it is reported, are charging their readers a large fee for telephone service in the giving of war news. Those who want to get the latest bulletins by telephone are accommodated only upon payment of a special weekly subscription.

War

By HERBERT KAUFMAN

Once more Mars has wrenched the pen from the fingers of Civilization and, dipping his blade in the heart of Europe, is writing history with the swordpoint. The last great war is raging. Reason lies mangled under the iron heel. Dread thunders peal on seven seas. Death beats the heavens on strange pinions and rains weird lightning from the clouds.

Mankind, on the threshold of Humanity's mightiest epoch, is hurled aside from the highways to progress and enlightenment; and the universe is forced to mark time while a continent spews its ancient hates. We wrought for peace these fifty years, and now we see the genii of retort and test tube, and wheel and wire, devoted to the ruin of the splendid realms they reared. We can not estimate the reckoning.

The ancient hordes of Persia and the bronze-shod phalanges of Macedon were pygmy armies, and they wielded feeble and blunted tools compared with these grim engines of a million parts that crush across the mother-lands like Titan Juggernauts.

A-sudden, all the color of past battle pictures pales, as candle-glow is dimmed by bursts of flame. There are no measurements with which to value what must come. We pause in stunned bewilderment and grope for terms and phrases fitting for the hour. Imagination is bankrupted by fact.

We shall wear the scars of this dread vandalage for a hundred years, but out of the holocaust, mightier and stronger races will emerge, refined in the furnace of an appalling woe; and, staggering for an instant beneath the load of grief and the burden of loss, will turn aside from the pathways of the Caesars and seek the roads to true power. Meanwhile, our souls are steeped in tears.

God guides human destiny, and in His farther vision rests all. We can not sense the Master-plan—nor could the Children in the Wilderness, nor the martyrs of the Coliseum, nor Jeanne d'Arc. But we, bred in the womb of those far-stricken pasts, can look a-down the vales of Yesterday and see that Man falls only to rise.

We learn our heights by gazing upward from the pits to which we topple when we misapply our opportunities to be superb.

Tomorrow, Europe will mount again, chastened and wiser, and nearer to the super-manhood which evades while ambitions wear the curse of Cain. And when the long-fed blight is cut away, and the huge wound closed, each nation will build anew, with the full power of resolve, freed from the threat of invading neighbors, and, with the resources now demeaned to the maintenance of starvation-making fleets and armies, produce in safety more than was ever reaped at peril.

Meanwhile, the Angel of Death sits at an adding machine and keeps count.

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The Big, New Long Distance Exchange in New York

Description of the Installation of the 1,700 Trunk Lines, 500 Toll Lines and 315 Switchboards and Test Boards for the Exclusive Handling of Long Distance Traffic—Published Through Courtesy of The Telephone Review

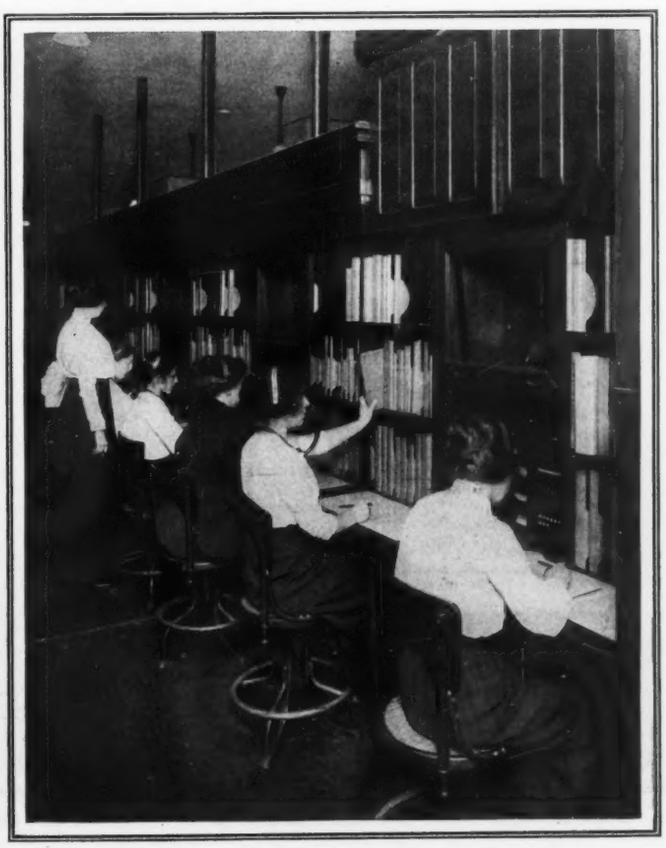
By A. W. Morse

In order to provide adequately for the increasing volume of long distance traffic to and from Greater New York and vicinity, there was cut into service at New York, last January the largest and best equipped long distance central office in the Bell system. The completion of this office, at a cost of approximately $500,000, embodying as it does the last word in methods, and equipment design, not only marks another step in the progress constantly being made by the Bell system, but also stands as a monument of achievement to the men of the engineering, plant and traffic departments who planned the equipment and drew up the specifications, and to those of the Western Electric Co. and plant department, who manufactured, installed and tested the equipment.

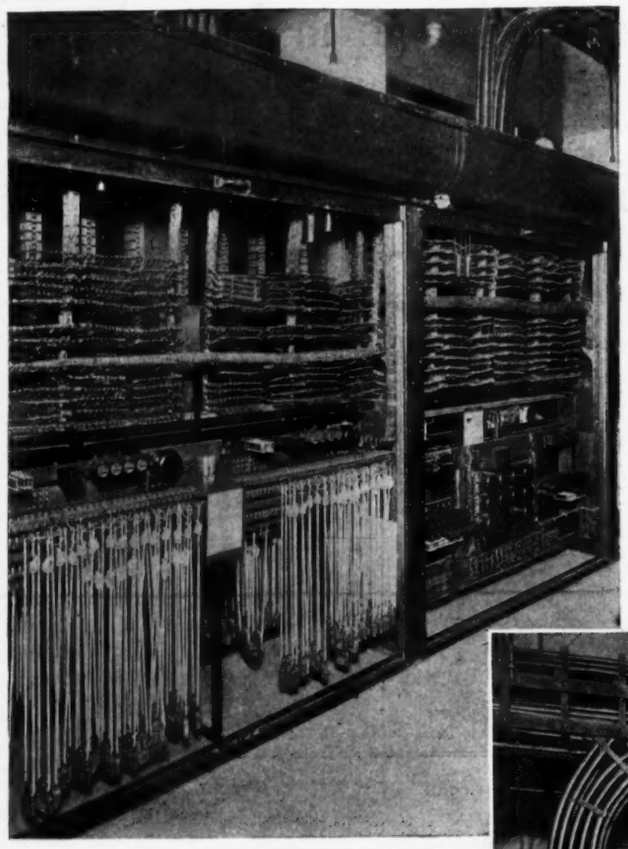
North Wing of the Fifth Floor Operating Room.

That an enormous amount of careful study and planning was given to this latest project, is indicated by the fact that the various departments of the American Telephone & Telegraph Co. and the Western Electric Co. were engaged on the design, manufacture and installation of the switchboards, test boards and associated apparatus, for a period of five years. And yet, on the night of January 24, 1914, this office, so extensive in size and so long in the planning and building, with its 1,700 trunks,

View of the Four Distributing Positions With Pneumatic Tubes.



Some of the 20 Directory and Routing Positions.



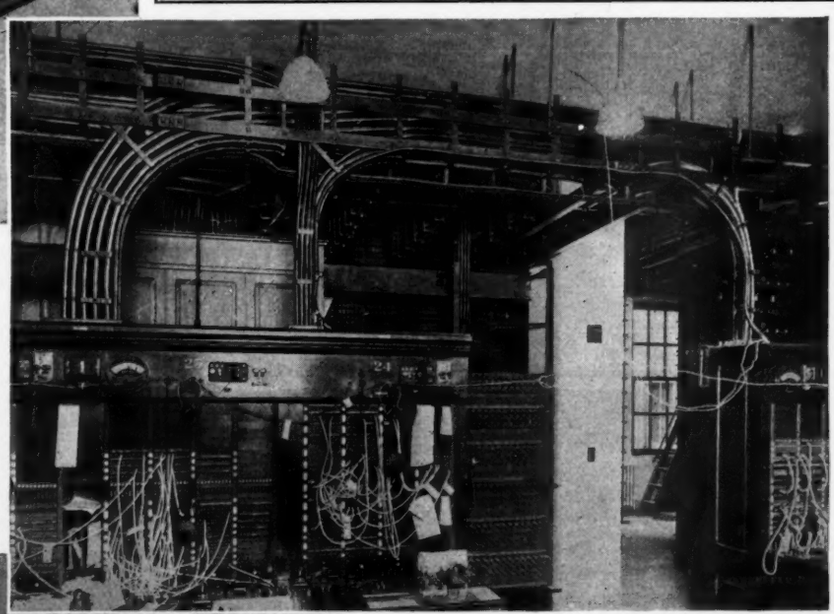
Rear View of Test and Morse Board Positions.

its 500 toll lines and its 315 switchboards and testboards, was cut into service in the brief space of ten seconds. That the transfer was accomplished without any interruption to the service is a tribute to the untiring efforts of hosts of telephone women, equipment men, testboard men and others, who worked, faithfully, early and late, that this undertaking might be a success. The installation involved the rerouting and testing of many toll and trunk cables, and the solution of many building problems, and great credit is due the plant and other departments of the New York Telephone Co. for the prompt and careful manner in which this work was handled.

An idea of the size of the new office may be gained from the fact that it covers approximately 45,000 square feet of floor space, distributed over three entire floors and a portion of a fourth in the new Telephone Building at 24 Walker Street. This building was designed, located, and built primarily for the purpose of providing suitable quarters for the long distance switchboard. The ultimate requirements of this board call for the use of six floors of the building.

On the third floor, containing 13,500 square feet, are located the offices of the district plant chief, the test and Morse boards, and the terminal and power rooms.

This floor is under the direct supervision of the New York district plant chief, H. G. Spohr, who is responsible for the maintenance of all equipment and toll lines, and for the handling of the company's leased wire telegraph service. The successful handling of this work requires the services of about

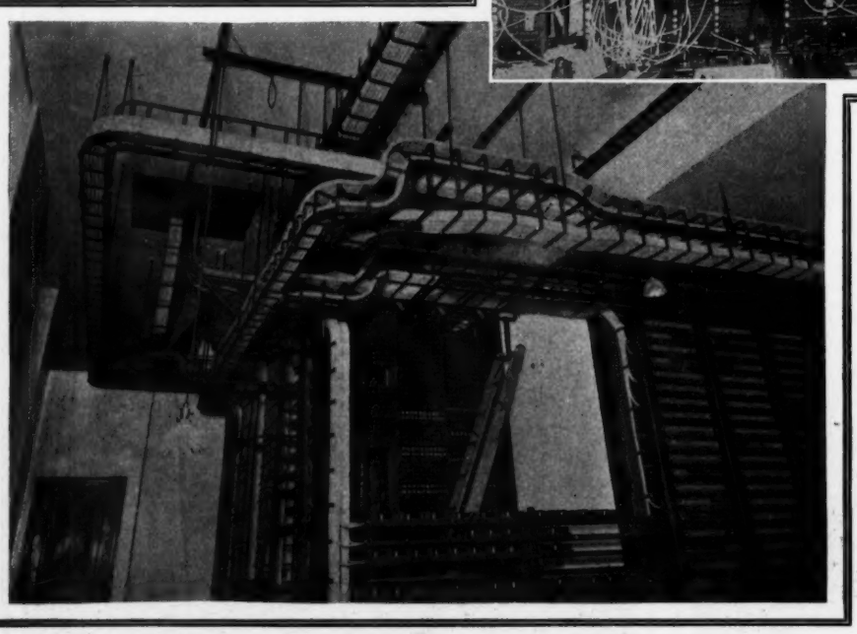


Test Boards and Lead Covered Duplex Cable.

80 test and Morse board and equipment men.

On account of the type and variety of the circuits terminating at this office, it was found impracticable to terminate them all on one distributing frame. The most economical and desirable arrangement was to provide three frames; namely, a main frame, a Morse intermediate frame, and a telephone intermediate frame. To the main frame are brought the cables containing the toll line circuits, the toll switching, direct and two-number recording trunks. From this frame the toll lines are cabled to the various test board positions.

The Morse frame is provided so as to care for the distribution of the various circuits required in the handling of the company's leased line telegraph business. It is



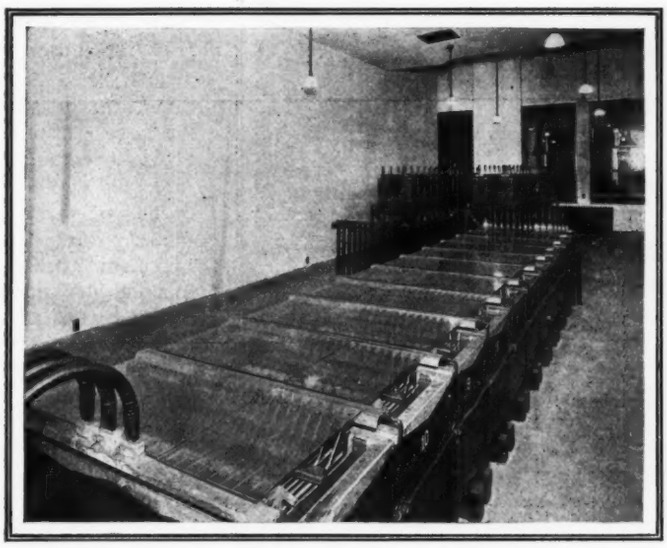
Part of Relay Rack, Showing Cable Runs to Telephone Distributing Frame.

the terminus of the various cables running to the telegraph repeater and duplex sets, the Morse board positions, composite sets, etc. To the telephone intermediate frame there are brought the various circuits which extend to the operating rooms on the floors above. These circuits include the drop sides of toll lines, the switching and recording trunks, etc.

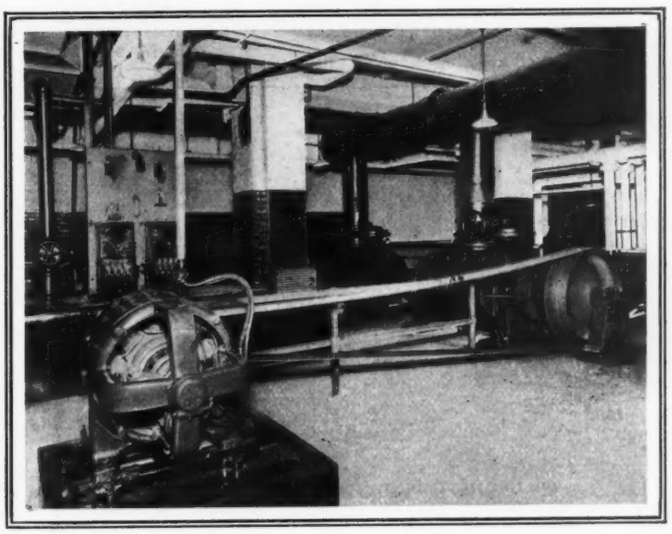
prompt clearance of any troubles which are liable to occur.

The Morse board positions are those to which the lines of the telegraph subscribers are brought. The handling of this telegraph leased line business is an important part of the work of the plant department. It is quite essential that the lines and equipment be kept in excellent condition at all times.

In order to provide for the operation of telegraph signals



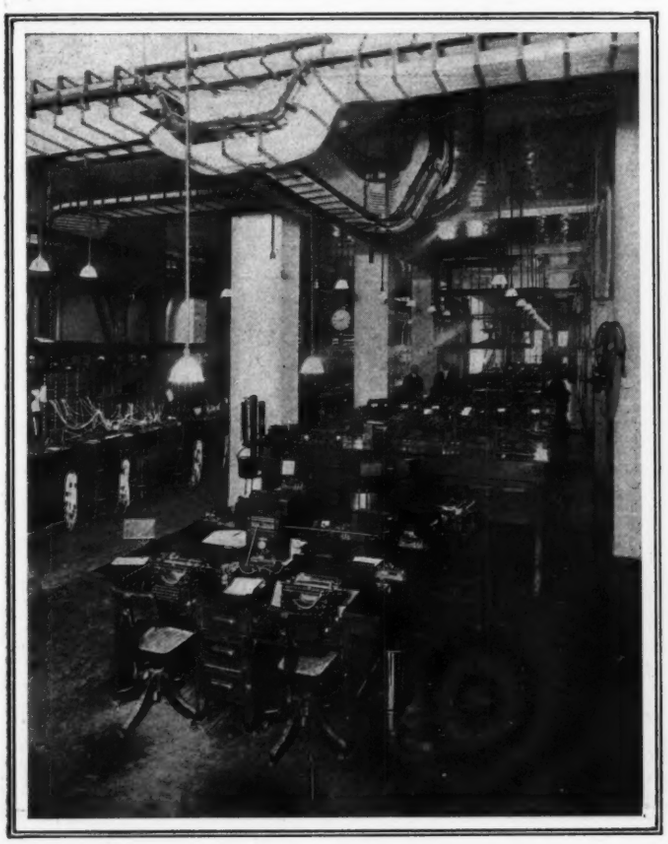
The Battery Room.



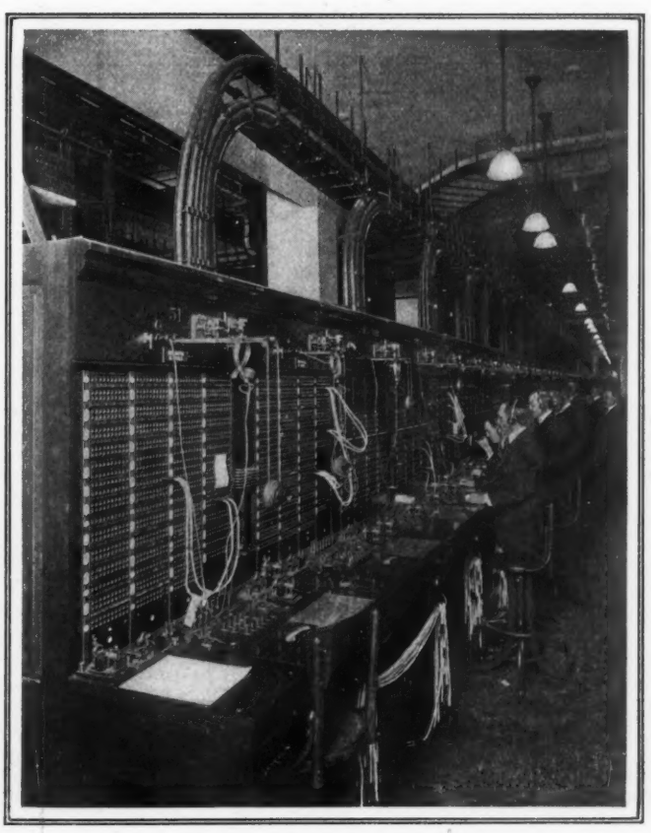
The Power Room.

There are 44 positions of test and Morse boards in the initial installation, equally divided between the two types. They are arranged in the center of the room in one row which extends for 132 feet, or practically the entire length of the building from Walker Street to Lispenard Street. The testboard positions are especially equipped to make the many tests which are required on long distance toll lines for the

over telephone circuits it was of course found necessary to use many special types of equipment, such as composite sets, simplex sets, telegraph repeater and duplex sets, etc. Approximately 70 per cent. of the toll circuits out of New York are arranged for simultaneous telegraphy and telephony. This requires the provision of 315 composite sets, 31 telegraph repeater and 128 duplex sets. It is not possible to ring over

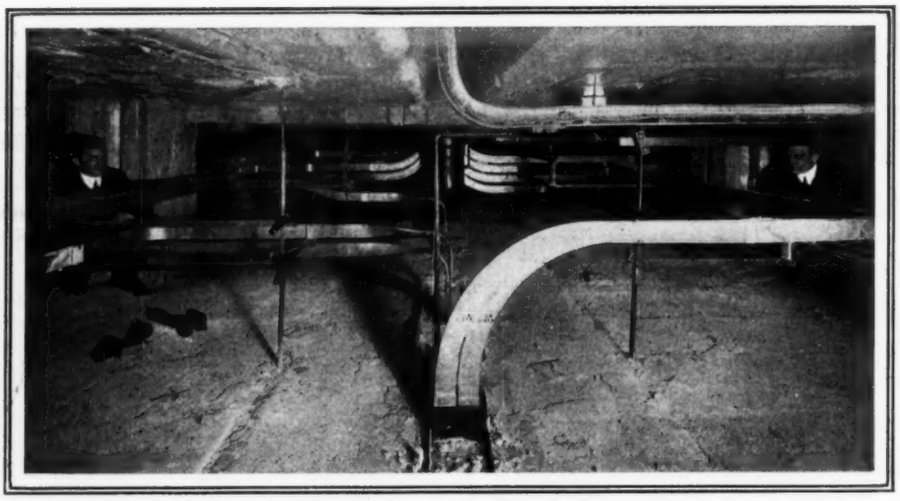


Test Room showing Boards, Repeater and Duplex Tables.



Test and Morse Boards Having Total of 44 Positions.

a composited circuit with the ordinary ringing current on account of interference with the telegraph signals which occurs. To overcome this a special ringer is used, and there are 630 of these installed in this office.

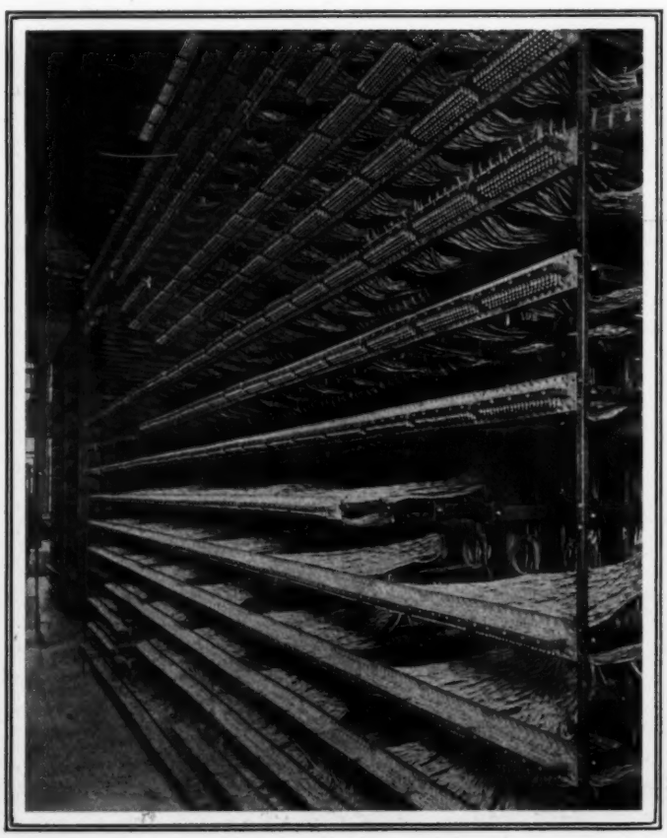


Pneumatic Tubes in False Floor Between the Operating Rooms on Fourth and Fifth Floors.

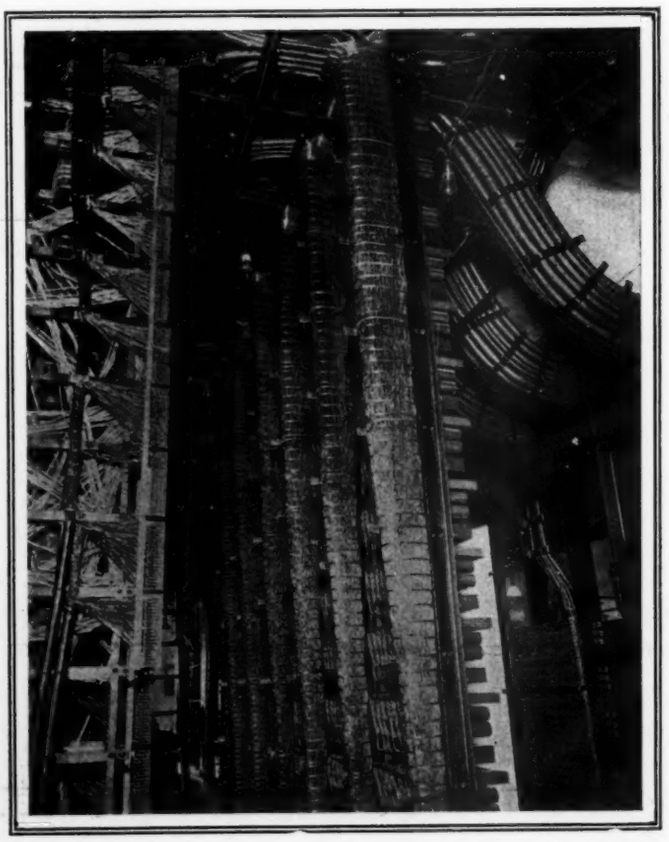
The power plant required for the operation of the telephone and telegraph equipment is located in the power room on the third floor, and consists of a 24-volt battery of 11 cells with G-29 elements, a 24-volt battery of 11 cells with F-11 elements and a Morse battery of 112 cells with F-7 elements. The 24-volt battery is used in operating signal lamps, busy signals, and relays, and in supplying the talking current for the operators' transmitters, the same battery furnishing talking current to the direct long distance terminals. The Morse battery supplies the power used in transmitting the telegraph signals over the toll lines. The 24-volt battery is charged by means of a 18-kilowatt, 600-ampere, 30-volt, direct current generator, which is driven by a 28.5-horsepower, 102-ampere, 240-volt, direct current motor. Two complete charging outfits are provided so that the failure of one will not affect the service. The power to operate the motors is obtained from the New York Edison Co., the regular supply coming from one power station and an emergency "break down" supply from another station. The Morse battery is charged directly from the Edison mains.

On account of the large size of the operating room and the location of the switchboards on two floors, it is impracticable to distribute tickets by messengers, so this work is performed by means of a pneumatic tube system. In the design and location of the switchboard equipment, careful study was made so that the tickets are routed through the tubes in the most efficient manner. Tube facilities are provided at all positions where tickets are handled, so that they may be disposed of in accordance with the operating instructions.

One feature of the new office is the absence of the boxed-in tube runs, which are so noticeable at other stations. This was made possible on account of the location of the recording positions on the fourth floor and the line positions on the fifth floor. Between the two floors a false floor, leaving an open space of four feet, has been provided, and the tube runs are made easy in this space. There is a total of 89 individual tubes with an aggregate length of 7,700 feet.



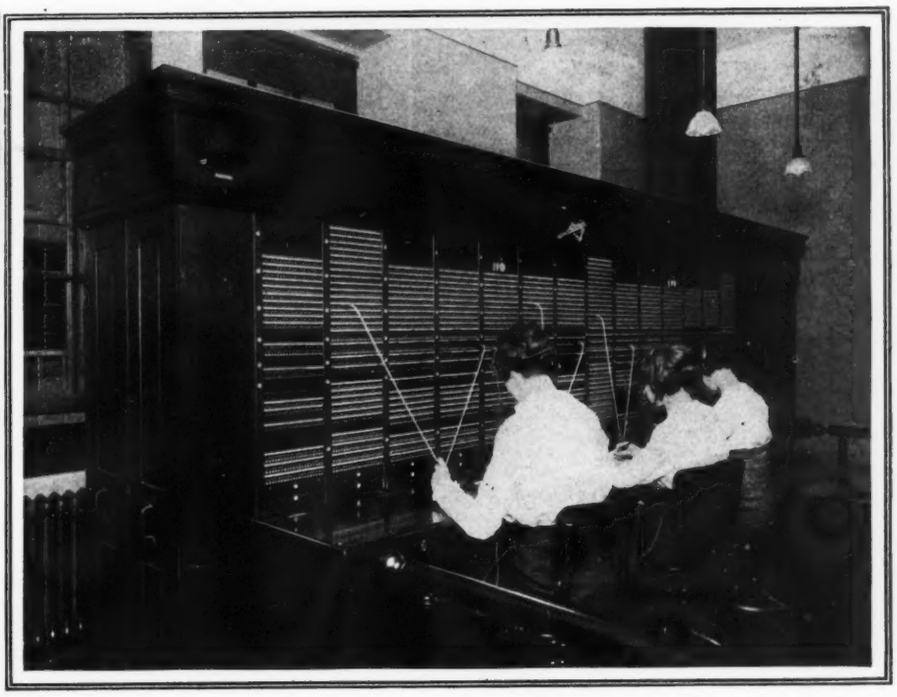
Horizontal Side of Morse Intermediate Frame.



Vertical Side and Cable Forms for Composite Ringer Relays.

Through these tubes there are approximately 30,000 ticket trips made each day. The longest direct tube is from the end outward Method 107 position to the ticket filing position, a distance of 173 feet, and is used in carrying completed tickets to the filing desk. As a ticket travels through the tube at the rate of 30 feet per second, the trip takes only six seconds' time as compared with the one or two minutes which would be required with messenger service. This time saving is still greater in the distribution of recorded calls, as the recording is done on one floor and the line work on another.

The telephone switchboards are located on the fourth and fifth floors. On the fourth floor are the recording, information, and directory positions. There are 48 recording, 12 information, and 20 directory positions installed. The equipment provided is standard in greater part, the exceptions, consisting of a six-panel trunk multiple arrangement, a new type directory desk, and a divided trunk multiple, being due to the size of the New York office. The multipling of trunks every six panels on a five-panel switchboard was first adopted in connection with the engineering of this switchboard. The trunk capacity of the board is approximately 1,500 with the standard multiple arrangement. As the initial installation consists of 1,300 jacks, an important gain in capacity was obtained and no difficulty has been experienced by the operating force because of the change in location of the various trunks on different positions. Under this plan there is a saving in jacks which amounts to many thousand dollars in the ultimate period.

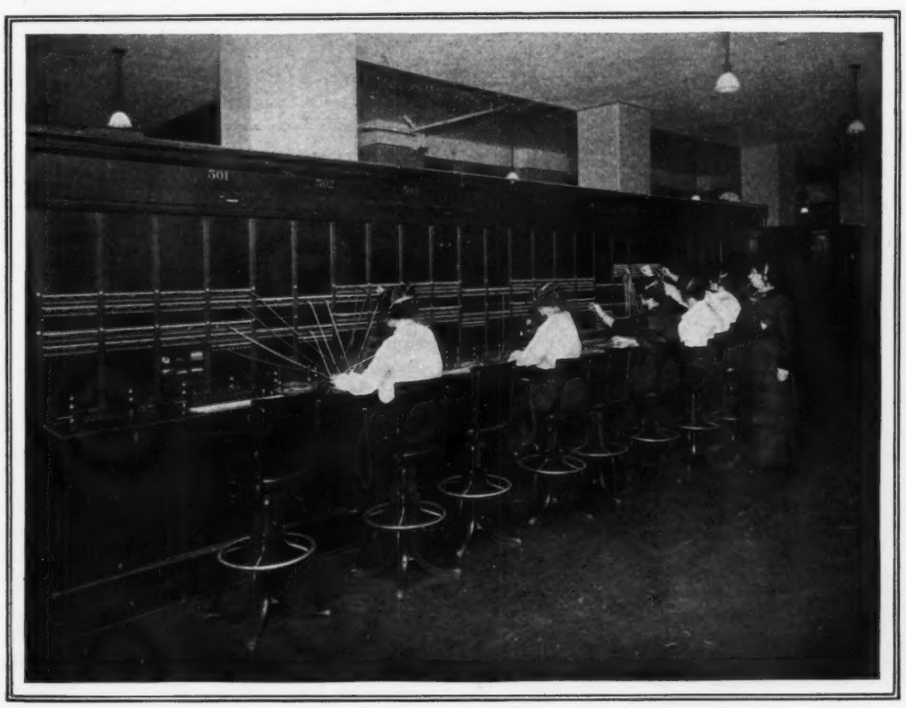


The Four Service Observation Positions.

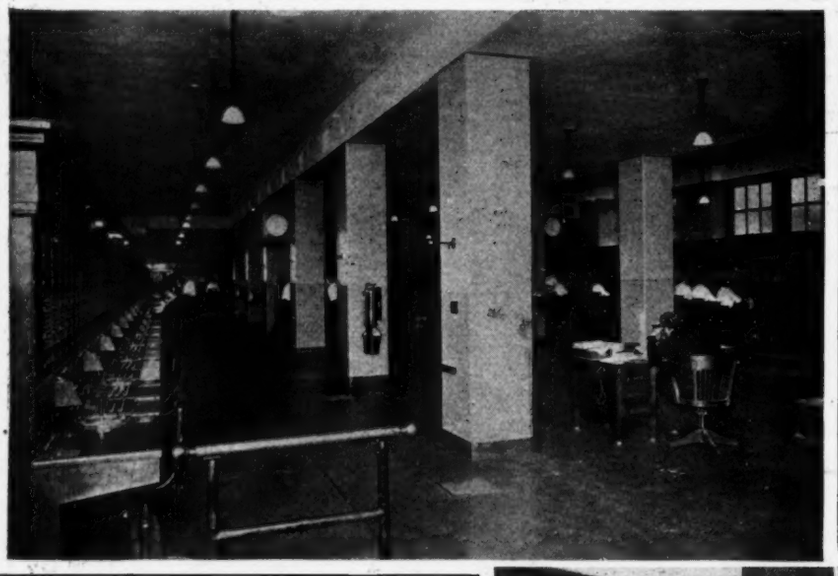
The recording positions are divided into two rows of 28 and 20 positions respectively. On one row 12 positions are equipped with the complete multiple of 1,300 switching trunks and the direct recording trunk multiple of 240. These positions are for use during light load periods and means are provided for concentrating the signals at such times. The remaining positions of this row have a multiple of one-half the total number of switching and recording trunks, the other half being in the second row. On account of the size of the installation, it is practicable to split the multiples in this manner, thereby decreasing the cost of the installation and retaining proper multiple facilities for team work.

Direct switching and recording trunks are provided to 40 of the local central offices, and it is over these trunks that all the long distance traffic of New York, with the exception of the Philadelphia two-number service, is received and completed. The tickets of all kinds recorded daily at the recording positions amount to 10,000. The busy hour of the day is from 10:30 a. m. to 11:30 a. m., and during this period approximately 1,500 tickets are written. These are sent through the pneumatic tubes to the distribution positions if no further details are necessary. If directory work is required, a tube to the directory position is available, and the ticket is routed through this.

Twenty directory desks are available, each having access to a complete set of telephone directories for all cities to which the single ticket operating method is in use from New York. The directories are so arranged in vertical cabinets that the minimum amount of time will be consumed in obtaining telephone numbers. Suitable equipment is also installed to make it possible for outward line operators to reach



The Five Through and Five Toll Switching Positions.



South Wing of Fifth Floor Operating Room.

a directory operator and also to enable the directory operators to reach any calling patron. It is interesting to note that approximately 50 per cent. of the outward calls are sent to the directory desks for additional information, while the other 50 per cent. are dispatched direct to the central distributing desks.

The switchboards are arranged in separate lines according to the class of traffic handled. One row contains the inward 103 group of 14 positions, a second row comprises the through and "B" positions; in another row are the 34 Method 107 outward and 5 Method 107 inward positions, while two rows of 41 positions each are required to handle the Method 103 outward and the Method 101 traffic. This arrangement was made to permit additions being made to various types in a logical and economical manner, as required by the increase in traffic handled under different operating methods.

The equipment is arranged to operate in a standard manner, and aside from its size, presents no novel features worthy of extended description, with the possible exception of the Method 107 (call circuit method) equipment. Only the traffic between New York and Philadelphia is handled by this method at this time, but plans have been made for material extensions of this method in the near future. This traffic amounts to approximately 2,800 calls per day and is handled over a group of 70 circuits, which are routed through underground cable the entire distance of 90 miles. The circuits are of the one way type, 35

Section of Board for Philadelphia Business.

View of One of the Two Rows of 41 Outward Positions.

being provided for the traffic in each direction. They are arranged for through ringing and supervision, the New York outward operator ringing the Philadelphia subscriber's station and receiving the standard supervisory signals from the Philadelphia subscriber and vice versa. These circuits are the longest in the country over which common battery supervision is given.

About one-third of the total Philadelphia traffic is handled by the two-number method. Direct two-number recording trunks, 100 in all, are provided from the various local central offices, and on calls of this type, the interval from the time the New York subscriber removes his receiver until he is talking with the Philadelphia party, is on the average approximately one minute.

Each of the positions at which the Method 103 outward and Method 101 traffic is

handled contains the full switching trunk multiple of 1,300 jacks and one-half of the outward multiple of the 400 ring down toll lines. In addition, for the inward ticket and delayed call traffic, a suitable number of secondary answering lamps associated with a multiple of the particular toll line groups handled on that position are provided. These secondary answering lamps are grouped to be transferred from the regular load positions to the medium load positions, from the medium load positions to the light load positions, and from the light load positions to the night load positions, so that the operators covering them may be assigned in accordance with the volume of traffic received during the various hours of the day. In other words, the arrangement

Filing and Charge-Quoting Positions.

Inward Positions Upon Which 400 Direct Toll Lines Terminate.

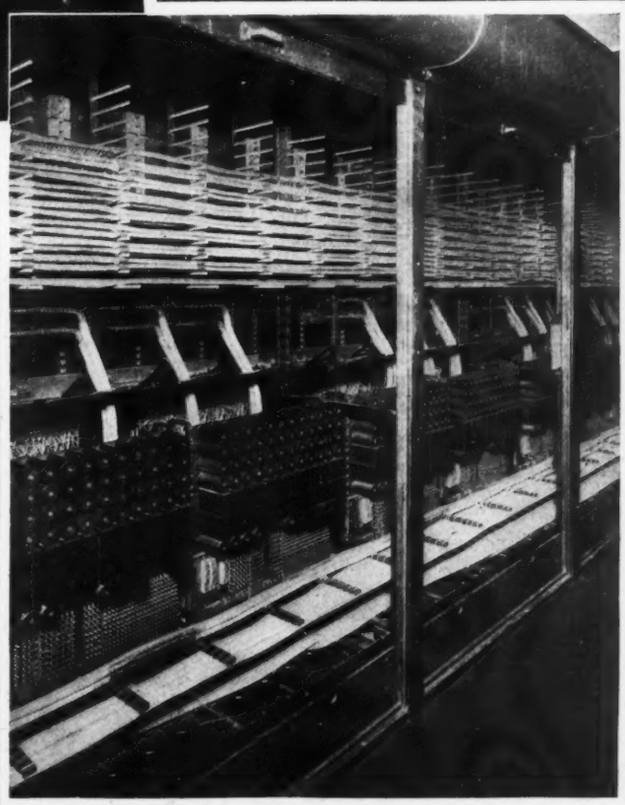
of the equipment permits of the maximum amount of flexibility and economy at all times, the full layout of toll lines, switching and recording trunks, and long distance terminals. This grouping is provided on eight positions of this line of boards, and all traffic is thrown by transfer keys to these positions between 11 p. m. and 7 a. m., when the tube system is not in operation.

The 400 toll lines used for the single and two-ticket traffic are divided into groups of various sizes in accordance with the volume of traffic to and via the direct circuit cities scattered in all directions of the compass over the Eastern, Southern and Middle Western portions of the United States. There is a total of 89 direct-circuit groups, ranging in size from one circuit per group to 36.

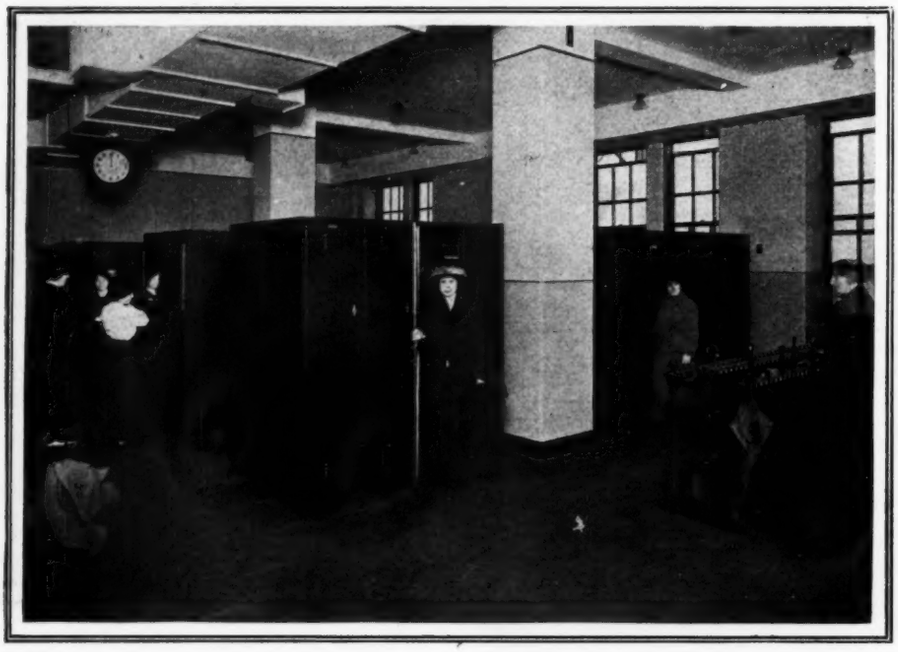
The complete switching trunk multiple, as well as the 400 toll lines with associated answering lamps and transfer keys, appear on the 14 Method 103 inward positions. The equipment is so arranged as to permit of the maximum amount of team work during all hours of the day, and by means of transfer keys allows the inward operators to transfer any ticket or deferred traffic, or requests for the through operator, to secondary answering lamps on the outward and through boards respectively. In other words, all incoming traffic requiring the recording of an inward ticket, or relating to originating deferred calls, is handled at the outward line boards. All other inward traffic is completed at the inward boards between toll lines and switching trunks.

Five inward tandem positions for handling the incoming Philadelphia traffic are installed. The incoming toll lines from Philadelphia terminate on positions in cords and plugs, and connections are established by connecting the single ended cords to local switching trunks which also appear in multiple at these positions.

In addition to the outward and inward positions, various types of mis-



Rear View of Inward Positions.



Locker Room, Well Lighted and Ventilated.

cellaneous positions must be provided to care for special work, such as through calls, ticket filing and charge quoting, service observing, training of operators, etc.

Immediately after the completion of conversation at the outward line boards, the outward message tickets are sent via the pneumatic tubes to the filing and charge quoting desks. These tickets are sorted, alphabetically arranged by terminating cities in the various compartments and allowed to remain for two hours directly in front of the charge-quoting operators. At the end of this time, they are transferred to a duplicate set of filing compartments on desks adjacent to the charge-quoting desks where they are rated in preparation for the New York Telephone Co.'s accounting department.

In connection with the special work done at this desk, it is significant that requests for charges are received after the completion of conversation on approximately 10 per cent. of the outward traffic. About 95 per cent. of these requests are received within 30 minutes after the end of conversation.

Five positions are provided to care for the 450 daily through connections. As all toll lines are brought into the New York office through many miles of cable, the through calls routed through this office are few in number in comparison with the other traffic.

There are four positions provided for the handling of the service observing work. These are located in a separate room on the fourth floor. Service observations are taken with two definite purposes in mind:

1. To show the quality of the service with regard to the speed and accuracy with which connections are established, and their reliability.

2. To show whether there has been an economical use of the plant and operator's time, and whether the prescribed operating instructions have been followed.

In order to obtain this information in detail, it is necessary to provide the service observation positions with a multiple of all toll lines, recording and switching trunks, and miscellaneous circuits which appear in the New York office. This board, from a visitor's standpoint, is one of the most interesting sights of the office, as it is possible to observe on the four positions all the activities of the 214 positions in the operating room. A very definite idea of the number of calls and the speed by which they are handled can be gained in a few minutes' stay in this room, by watching the signals flash in and out on the different toll lines and trunks. Observations are taken on approximately 1 per cent. of the entire traffic of the New York office.

The operators' school is composed of the instructor's office with an adjoining reception room for applicants for operating positions, a lecture room containing a demonstration switchboard and suitable maps and charts, a study room, and a practice switchboard room containing 18 practice switchboards, which are duplicates of the various types of boards in the operating rooms, and five instructors' desks.

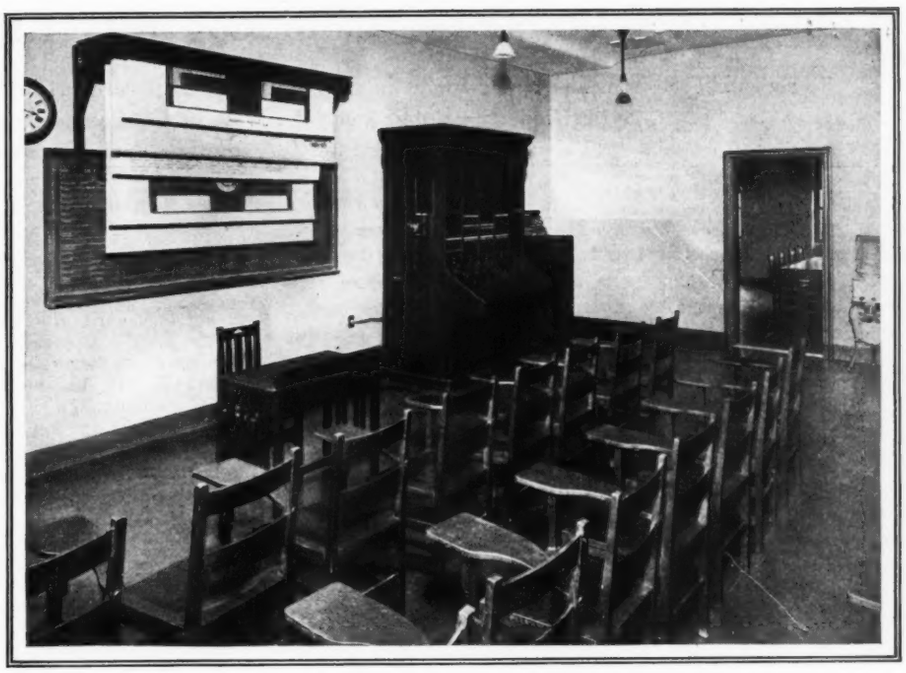
If an applicant is successful in passing the entrance examination, which includes a test in spelling, arithmetic and geography, as well as one for hearing and eyesight, she is given the prescribed seven weeks' course of training in the A. T. & T. Company's operating instructions. This course divides her time on the daily lessons between the lecture room, the study room, and the practice room. After absorbing the theory underlying the handling of each class of traffic, she puts the acquired theories into practice by handling improvised calls at practice switchboards under the direct supervision and instruction of instructors located at the instructors' desks. After graduating from the training school, the student operator is assigned

In the Operators' School are Duplicates of the Various Types of Working Boards.

to a position in the operating room and begins her career as an operator by handling the least difficult class of traffic. Later, as she becomes more experienced, she is assigned to the more difficult classes.

The operators' schoolroom layout permits of handling three classes, of 15 students each, simultaneously, because the lecture, study, and practice rooms are all separated from each other. The average class which is trained in the New York office, numbers about ten students, except at the time when the vacation relief operators are being trained, when as many as 40 are receiving instruction at one time.

The operators' quarters in the new office cover approximately 10,000 square feet of floor space, divided between the fifth and sixth floors. On the fifth floor, adjacent to the main operating room, are the sitting room and private retiring room. On the sixth floor are the dining and locker rooms. Throughout these quarters sanitary features have been adopted, which include the use of drinking fountains, and of paper towels in the washrooms.

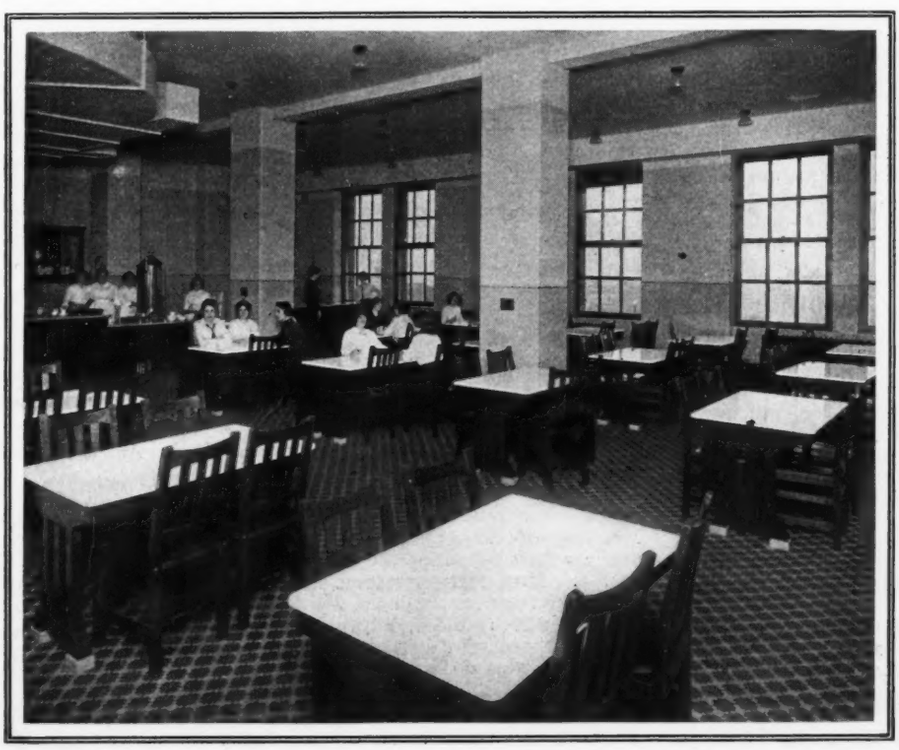


Lecture and Study Rooms of the Toll Operators' School.

The main features of the new sitting room are: sufficient space, sunlight and ventilation, rockers with leather cushions, a reading table with current magazines, several writing desks, a small library containing over 400 volumes, leather couches, potted ferns, rugs, pictures—all reproductions of famous paintings—and suitable window hangings.

The private retiring room, a small room adjoining the sitting room, is fitted with standard hospital equipment, including three beds and a medicine cabinet, in which are kept a few standard remedies for slight indispositions of operators.

The main feature of the new dining room is the new type of small individual table accommodating four people. The tops of these tables are of thick white glass, easily kept clean, which eliminates the necessity for table linen. The 24 tables provided allow of a maximum capacity at one time of 96 people. Tables of this type were chosen as they permit of more social intercourse between the operators. The arrangement is such that ultimately they can be joined so as to form long tables and thus double the seating capacity of the room. The women employes are regularly furnished coffee and tea free of charge. and in the warm summer months, in addition to this, they are given fresh milk.



Operators' Dining Room with Seating Capacity of 96, Which May be Doubled.

In the new locker room, where there is plenty of sunlight and ventilation, are new steel lockers, each 24 inches deep. Each easily accommodates the clothing of two persons A sufficient number of locking umbrella racks are also provided, so that wet umbrellas need not be kept in the lockers.

A welfare supervisor, who reports to the chief operator, is in charge of the operators' quarters. It is her duty to be watchful over the welfare of all women employes in the office and to see that they obtain the full benefit of all the comforts and conveniences provided for them.

The total woman force required to handle properly the traffic and equipment described above, numbers about 350, including the chief operator, assistant chief operators, supervisors, and operators. In general, the number of operators assigned to each supervisor is six. An assistant chief operator in turn has charge of one line of switchboards, including several supervisors' divisions. The assistant chief operators report to the chief operator who has charge of the force.

Public Relations of Utilities in Theory and Practice

"The Public Be Benefited!—Persuade the Public It Is Being Benefited!"—The Interest of the Public in Private Property—Public Feels the Need of Controlling Private Property Devoted to Public Service—The Future Pathway

By Public Relations Engineer

It becomes absolutely necessary, sometimes, for the government to take private property for the public use; and, it may be helpful to familiarize ourselves as to why and how this is done.

Why and How the Public Takes Private Property.

In certain agricultural regions of the Middle West, most of the wagon roads run straight with the section lines, all turns and junctions being made at right angles. But in one such locality, the writer has frequently driven over a road which runs for half a mile through a farmer's field. In the beginning, it was a mere Indian trail across the prairie. After a time it was followed by the homesteaders. In the goodness of his heart, the owner of the farm permitted his neighbors to continue using it, because it ran diagonally and was shorter, therefore, than the distance would be along the sectional lines around the right angle corner of the section.

Now it happens that there is a law which makes it impossible for the owner of a farm to close up this sort of a trail, or to prevent the public from traveling over this kind of a road, if the farmer has allowed it to be used for a certain number of years. Therefore the owner of this farm, by permitting continuance of the practice established by the Indians, by encouraging the public to rely upon this route as a pathway from one locality to another, forfeited his legal rights. His permission for the public to use the pathway became, in time, under the law, an irrevocable abandonment of his authority over the ground in question.

A declaration of the United States Supreme Court holds that: "When the owner of a property devoted it to a use in which the public has an interest, he in effect grants to the public an interest in such use (a proprietorship so to speak), and he must to the extent of that interest submit to be controlled by the public for the common good."

After quoting these words from the Supreme Court decision, the author, in a talk given some years ago, said:

> I am not an expert concerning the matters of law, but I think I know what is fair. It seems plain to me that when a property is devoted solely to a public use and is conducting itself in absolute submission to legislative regulation, it is as sacredly enlisted and as much entitled to protection by the government as the mail carrier's pouch, the policeman's club, the sheriff's right arm of authority, the soldier's uniform, or the gown of the judge on the bench.
>
> I confidently expect, therefore, that when, by proper legislation, public service businesses are regulated and controlled for the common good, the courts will hold also that when a privately owned property is devoted solely to a use in which the public only is interested, the public, by making such use of the said property, acknowledges and assumes responsibility. Or it should, at least, acknowledge and assume responsibility for safeguarding, protecting and compensating those who have provided or paid for the time, the talent, the material and the muscle that has been put into it. In order to be fair and in order to promote honor, honesty and the common good, the public must acknowledge and assume responsibility for safeguarding and protecting the "days of work" that have been put into the utility plant and the "days of work" that have been put into the up-building of its business. It should do this no less than it safeguards and protects the "days of work" that are represented by a government bond.

Justice Cannot Use a One-Sided Balance.

This last mentioned requirement is as inseparable from the decision of the court, from which we have quoted, as one side of the balance, used by the blind-folded goddess for determining justice, is inseparable from the other.

It has been declared by the United States Supreme Court that, "Regard for the common good is the highest law of the land." I venture to say that the day is not far distant when the other side of that same truth must also find expression in the decision of a court of equal authority. Justice will demand a decision to the effect that an equal regard on the part of the public for the rights of those who have provided a utility property that is faithfully and equitably devoted to and used for no other purpose than the common good is just as essential a requirement of the highest law of the land.

We see now that when this prediction was made some five or more years ago, one important fact was overlooked. The fact was overlooked that the public feels the need of controlling private property that is devoted to a public service. The public, not only feels this need naturally, but that feels it without studying or analyzing. It feels it more and more quickly even than it feels the need of protecting those whose "days of work" have been put into the property that is thus devoted.

The fact was overlooked that the immediate and more easily felt self-interest of the individuals who constitute the public, tends naturally to create a public sentiment which demands regulation of the devoted private property and business; whereas, failure on the part of the public to protect, safeguard or compensate those individuals, whose "days of work" produced and built up the property and business, does not hinder, but on the contrary helps the immediate or short-sighted selfishness of the utility's patrons.

"The greatest destruction of life in the history of man's upward progress," "The greatest suffering since the dawn of human consciousness" is some of the language used concerning the present war between nations which have been called the civilizers of mankind. No argument is needed to prove that good will is not yet fully established among the nations nor among the races of the earth. No argument is needed to convince us that the relationship of government to the public needs to be improved.

"The indifference of business men to public affairs" is one of five causes or reasons for the present business depression, as given in the August issue of American Industries, the official organ of the National Association of Manufacturers. By their own mouthpiece, therefore, business men admit: First, that public affairs need attention; and second, that business men, by their indifference concerning public relations, are responsible for an important part of our present perplexities.

Commenting favorably upon this article in American Industries, the editor of the Minneapolis Tribune says:

> Business men, not excluding members of the National Association of Manufacturers, must either take more part in public affairs or suffer the evil consequences of their neglect. . . . Must there not come a time when legislative authority of the American republic will have authority to scan American business methods, adjust them, and provide commendation for those who do right and condemnation or punishment for those who do wrong?

"A large part of the sufferings of the people of the United States is the direct result of that faulty theory and practice of our educational endeavor which gives an undue propor-

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tion of talent, time and treasure to teaching how to enjoy; and which, therefore, leaves our children unable to provide," says an able educational optimist. He is not afraid to face facts that do not flatter, and he faces them for the purpose of remedying rather than as a mere matter of complaint. In this declaration of the staunchest friend of our schools, we have an expression of the fact that the school's relationship to the public needs attention.

Philanthropists need to pay more attention to the causes of the sufferings they seek to alleviate. The cause of the poverty of certain of those who are objects of charity needs attention no less than their present unfortunate condition. "This ought ye to have done and not to have left the other undone." Thus spoke, recently, a well known authority in the field of philanthropy; and we know that philanthropy is seeking to get into a better relationship to the public.

The Japanese and Chinese have spoken concerning the light which seems to them to be thrown upon our religion and our churches, by nations, warring against each other, praying to one and the same God for the success of their armies. The remarks of the adherents of other religions and the heartaches and shame of the best of our own church people, leave no room for doubt, that much is still missing in the relationship of the church to the public. We may be ever so resolutely determined to maintain a separation of church and state; but must not school and church either serve the public or fail just as truly as the railroads and other utilities must serve or fail? What are our schools and churches if they fail to serve the common good?

Learning by Suffering.

Surely the people of this age will witness enough of the suffering of war, the embarrassment of business, the perplexities of politics, the problems of education, the confusion in philanthropy and enough of the sorrow of the church, to teach them, from actual experience, that it is better for the individual to turn from his own low, narrow, temporary and selfish disregard for the common good, to that higher, broader, more permanent and more valuable interest which every man has in preserving respect for the right kind of authority. Enough suffering, embarrassment, perplexities, confusion and sorrow will be seen to lead us to a better appreciation of orderliness and to a real reverence for the common good.

As the farmer, to whom we have heretofore referred, thought he "owned" his farm with an ownership that could defy and disregard the common need, so some utility men think they own their utilities with an ownership that defies and disregards the common need. Some individuals think they "own" their "lives" with an ownership which permits them to laugh in the face of any and every public need for their time, their talent, their influence or their treasure.

But are we not living in that age during which the most supreme test has come upon civilization? And, for the defense of its own progress, has not civilization the right to claim, take or draft into its service, the time, the talent and the treasure of the most religious, the most cultured or educated, the most philanthropic, the most statesmanlike, the most industrious and the most commercial man, woman or child? For the defense of its own progress has not Civilization a duty to perform? Is it not the duty of Civilization to call for volunteers? Volunteers to serve in an army which might be called a Good Will Fellowship? Volunteers for an army that will defend, preserve and, so far as may be necessary, fight for Good Will First?

Will Not the Attainment be Worth All It Costs?

After laying this foundation of a volunteer army, or a Good Will Fellowship, is it not the duty of the supporters of Civilization to promote "Good Will First" as boards of health promote sanitation? Is it not the duty of the supporters of Civilization to remove, as rubbish, everything that interferes with or fails to nurture Good Will in business, industry, statecraft, philanthropy, education and religion?

As already suggested, it is the writer's conviction that prosperity, progress or civilization cannot be perpetuated except by constantly increasing the walls of peace as a security for mankind; and that the walls of peace cannot be expected to stand against the assaults of a universally educated ill will. The walls of peace can only be made permanent by providing them with a foundation of "Good Will."

In a certain place during ancient times, a wise leader built an effectual wall against the ill will that was theatening his people. His wisdom was shown by the fact that he set each man to work building that particular portion of the wall which was needed in front of his own home; and by the further fact, that he placed in one hand of each builder of the wall, an implement of war with which to defend himself, while he used in the other hand the needed tools with which to build a defense—both for the common good and his own home.

We have previously said that fear of the return of a dark age, or chaos, would probably be the beginning of the wisdom that would turn men's minds from the evil of an excessive individual selfishness to the greater benefit of the common good. But those who succeed best in guessing, predicting, or prophesying, the pathway along which events will travel during the next 15 years, will have an important opportunity and an equally important obligation for helping forward the movement that will improve public relations. They certainly ought to "get together." They ought to *fellowship* each other. They ought to have fellowship in the work of *thinking a way through* to where a majority can be led to realize the importance of Good Will First.

Would Enjoin Telephone Directory Advertising.

The right of telephone companies to publish in larger type the names of subscribers who, as advertisers, pay for that privilege, is questioned in a suit recently filed in Cleveland, Ohio, against the Cleveland Telephone Co., and the Cuyahoga Telephone Co. The suit is brought by P. A. McHugh, a manufacturer and dealer in portable seats for use at circuses, street fairs and other gatherings. He charges that the telephone companies, by printing the name of a rival firm just above his name in large display type in the telephone directory, have injured his business.

He states the telephone companies are public utilities and that advertising is outside their province. He asks an injunction to prevent the companies from printing the name of the rival company in larger letters or in more conspicuous manner than his own.

Chicago Telephone Co. Earnings.

The Chicago Telephone Co. has paid into the treasury of the city of Chicago $221,993, which is 3 per cent. of the gross income of the company for the last six months, the proportion due under the ordinance.

The exchange revenue of the company for the last six months was $6,535,589, and the toll revenue for the same period was $493,607. Miscellaneous receipts were $392,001, making the total receipts $7,421,197.

Bad debts, charged as uncollectible, amounted to $21,417. Gross receipts on which the tax was levied was therefore $7,399,779 for six months.

Emporia Company Seeks to Enjoin Kansas Commission.

The Emporia Telephone Co., of Emporia, Kan., is seeking a permanent restraining order to prevent the Kansas Public Utilities Commission from prohibiting an increase of rates to the company's patrons, from $1 to $1.20 for four-party service. A temporary restraining order was granted by the Shawnee County circuit court.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Every Practical Telephone Man

By Paul Hamilton

"So it is that young doctor chap after all?" came over the wire, in response to Miss DeLand's pleasant "Number please?" "Well, well, now, when is it going to be? The Banner didn't give a date."

For once the auburn haired girl was at a loss for a quick reply. "I—I—number please?" she stammered. "Here, Nellie,

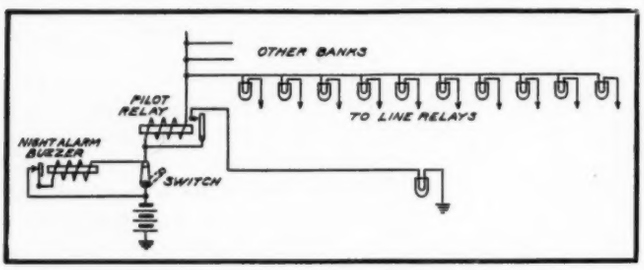


Fig. 138. Pilot Lamp and Night Alarm Circuit.

take this call. I want to get a drink," upon which Miss DeLand left the board and the room.

The Banner had carried a brief paragraph giving definite tone as to the rumor that the "popular telephone operator, Miss Katherine DeLand and the favorably known and aspiring young medical student, Mr. William Forster, were formally engaged." All the morning Kitty was annoyed by congratulations, and, after the first instance, was not found wanting in repartee. Nellie found it necessary to hold many calls for her companion's personal attention.

Although Kitty well knew that the information had been given out by her dressmaker, she frankly accused the "Doctor" of breaking his promise of secrecy, much to that young man's discomfiture. Nellie, of course, had known the facts for sometime, but she had been several times more silent than the proverbial Sphinx.

The discussion between the lovers ended after the Doctor had floundered blindly and with amazing stupidity from one impossible explanation to a more improbable one, until Kitty's patience was exhausted and her inclination for mischief satisfied.

"Well," she said, "it doesn't matter who or how. You'll pay for it—see if you don't," and turned away. She might have relented somewhat from her fixed intention had she known to what schemes Frank and Germany resorted in order to annoy their fellow workman.

Mr. Barrows and Mr. Rankin had been aware of the impending "disaster," as the latter called it, for sometime. During the ride they had taken, a frank discussion of affairs affecting the telephone business in Craneville had been indulged in. Mr. Rankin admitted that from the day he closed the deal with Mr. Barrows, he had never been free from a "hankering to get back into the business." He found Mr. Barrows willing to consider disposing of the plant.

"Barrows," the liveryman said, "I don't want to get into it with the same idea I had before—that is for making easy money. If I can make it pay just a fair interest on the invested capital, that is all I care for. But I probably couldn't make it pay out."

After some further comments Mr. Barrows volunteered the information relative to the Doctor having money to invest. He also suggested that, as the exchange now warranted the regular employment of both men, Frank and Germany might be willing to make small investments. Mr. Rankin knew that they each had a little money in the bank and could estimate pretty closely the exact amount.

As he was not a man accustomed to deliberate long upon any question, Mr. Rankin by Monday morning had formed his plans. The price Mr. Barrows had quoted for his interest, was a little higher than Mr. Rankin thought it should be. He discovered, however, he was looking at it from a comparative point of view; that is the difference between the price Mr. Barrows had paid two years before and that which he now asked. He did not know nor did Mr. Barrows advise him, as to how much additional capital since then had been invested in addition to the surplus earnings.

"Any way," he counseled himself, "I guess I'll have to take my medicine. With the livery stables being turned into garages and street cars running on the country roads, and with young Cardiff handling the real estate branch without any particular assistance, I've got to have something to keep me busy. Yes, he would form a stock company with the Doctor, Frank, and Germany and himself as stockholders.

Mr. Barrows suggested that the three men could run the plant if Mr. Rankin looked after the business end. In this the Doctor would soon be qualified to assist him if necessary.

Frank and Germany were both surprised when Mr. Barrows, privately gave them the outline of Mr. Rankin's proposition. Frank was in favor of accepting at once, but Germany's ancestral caution led him into a close and careful consideration of the matter. However, the plan was carried out without Germany even reaching a decision. Mr. Rankin said he and the Doctor could each take up $500 in stock and hold it 'til "Germany got his Dutch brains untangled."

At Mr. Barrows' suggestion, Mr. Rankin incorporated with a capitalization of $20,000, forming a close corporation. With approximately 800 subscribers, the investment stood at $12,000. The farmer lines were not taken into consideration, except as a part of the whole, while in reality they represented a value or investment per station far greater than the stations in

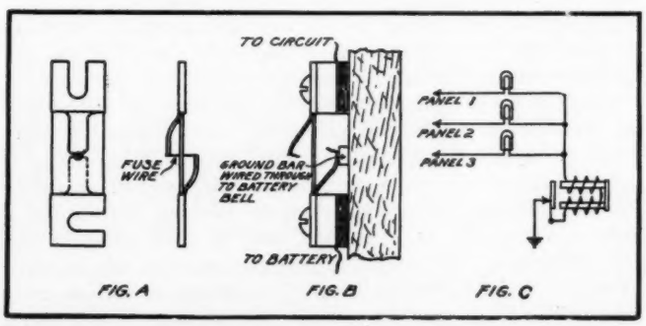


Fig. 139. Alarm Fuse—Wiring of Fuse Panel Alarm Bell.

Craneville. Mr. Rankin said their share of the loss in revenue was easily compensated for by his anticipated fight with the Runkel crowd which was now clamoring for an exchange line.

The new company would start with a clean sheet, as the replacement reserve, which Mr. Barrows had set aside, had been

used in the recent change to common battery. As Mr. Barrows had followed a bookkeeping system of his own planning, he advised Mr. Rankin to secure the necessary information from the state commission as to its accounting requirements and turn it over to the Doctor, as the plant now came under the commission's jurisdiction.

"What you think of him?" asked Germany of Frank one day as they were working in the cable house.

"Well, I'll tell you, Germany," said Frank, speaking seriously, "I'm going to put my money in with Rankin. Keeping the plant up is going to be up to us. If we haven't learned how to take care of this exchange during the last two years, we'd better go down to the brickyard. Rankin has learned a lot too. You've got your money in the bank earning 3 per cent. From all we can see now, it will earn 7 and perhaps more. Barrows has made money here almost from the start. Of course, he knows more about the business than we ever will, but between you and me and the Doctor, I guess we can pick up enough to handle our end of it."

"I'll think him over some more. Maybe I know tomorrow."

"All right, pull that jumper through and close it on 66. That will fix up your tongue-tied friend, Burnstedter."

"Boys, there are a number of things to go over yet before we get through," began Mr. Barrows at the meeting that night. "We will go over the switchboard circuits first Germany asked how that 'bulls-eye,' the pilot lamp you see in each panel, is operated.

"The lamp is useful from an operating standpoint, as it is in circuit with all the line lamps in the panel. The operator can always see it. Possibly a line lamp, partially hidden by a plug in another jack, may come up, or for some reason it may not burn to full candle power and be dim. The pilot lamp calls the operator's attention to it.

"In this circuit (Fig. 138) you see that battery cannot reach any lamp without first passing through the pilot relay and lighting the 'bull's-eye,' as Germany calls it."

"Suppose the line lamp is open or something," said Frank. "How do we find out which one it is?"

"By plugging in on each jack until you find the one that cuts off the pilot. The cut-off is made through the third wire and will operate the pilot whether the line lamp is in circuit or not."

"It is the white lamp you are talking about, isn't it?" the Doctor asked. "There is also a red one before each operator. What is that for?"

"It worked in the same manner as the pilot lamp and was in connection with the supervisory lamps. I had it cut out, as when more than one supervisory lamp is burning, the operator's attention is distracted. Two subscribers might be flashing at the same time and only one get immediate attention. I prefer to have her watch the supervisory lamps direct. Those lamps should be replaced with apparatus spaces."

"By the way, Doctor," continued Mr. Barrows, "I wish you would change the night alarm bell from the main battery to dry cells."

"It will take about a dozen dry cells, I presume?" said the Doctor questioningly.

"With the present bell, yes. There are some four-ohm buzzers in the cabinet. Use one of them, also take one of the 200-ohm buzzers and connect it for a fuse alarm. I find that circuit was left open. A supply of alarm fuses has been ordered."

"What are they for?" Frank answered.

"They are designed to give instantaneous notice of the blowing of any fuse. For instance, a fuse on the generator might blow and it would be several minutes before it is discovered. That reminds me that we will require two alarm bells—one battery bell and one for the generator.

"In this style of fuse (Fig. 139-*A*) the wire is held at a tension. It must be closed solid or the tension of the two small elastic points of attachment (Fig. 139-*A*) will separate like this (Fig. 139-*B*). When there are several fuse panels, the same bell is used. It is wired like this (Fig. 139-*C*). The lamp will glow and indicate the panel in which the fuse is blown. In case the bell should not operate, the lamp will still be a reminder of the trouble. For this reason the lamps should be located in a conspicuous position.

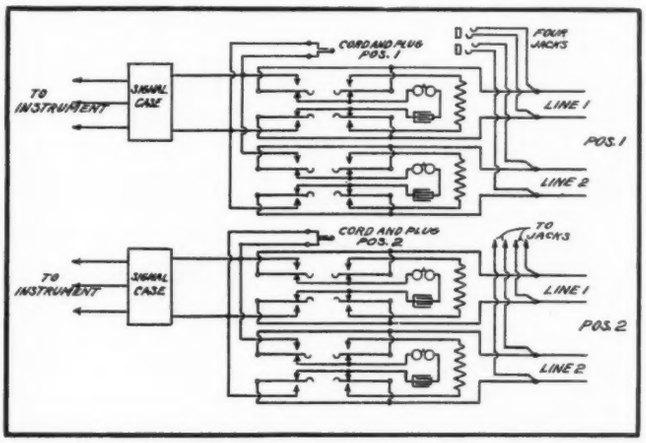


Fig. 140. Circuit of a Two-Position Chief Operator's Desk.

"I suppose you have all noticed two pairs, or four extra cords, in each position. They are storm or trouble cords. They are provided with lamps and keys, but as you see, the keys have red levers, which indicate they are not to be used for regular connections. When for any reason a line is out of order—that is, when it cannot be used for calls either way —it is plugged up with one of those cords.

"In addition to battery, the third wire is also connected to a special brush on the ringing machine which gives a singing sound on tone. In testing, the operator knows the line to be out of order, and so informs the calling subscriber. A great many permanent signals are due to receivers being left off the hooks. When the receiver is hung up, the operator will get the disconnect signal, and after testing the line with the subscriber, she may release it, if she finds it is O. K.

"The two end positions of a board are considered only half useful for operating, as the reach for the multiple is all to one side. They can be used in emergencies, of course, but usually left vacant of equipment. I have had two switches installed to throw the tone on all the cords in these two positions. In case of a severe storm, we will have 60 extra cords to use for hospital work.

"At the chief operator's desk, we have four lines, two for each position. Each position has a standard desk set; that is, a signal case and pedestal with equipment. On account of a double throw key being cut in on each line instead of using two instruments, the circuit is slightly altered.

"It is like this (Fig. 140): The line comes to the desk through cable and then to the signal case in the regular way. Each line must have a signal case, and also separate bells. I said the line went direct to the signal case, but that is not usually so, for it must go through the key first.

"This circuit appears complicated, but it is quite simple. Each position has two lines, and that is usually enough for all purposes. The bells are so arranged as to be across the lines all the time through a condenser. The lines can be opened at the key or switch hook as convenient. The key is thrown in one direction to talk and reversed, throwing resistence across the line to hold a connection if necessary.

"In case two lines, during certain periods, are not sufficient, a cord with plug attached is provided to answer calls or to use

the lines in the other position. The jacks are mounted between the positions or at the inside of each position.

"The operator's supervisory signal is controlled from the switch hook or key, preferably from the hook.

"In an exchange of this size, I do not believe in too many complications, so I have left the monitor jacks out of service.

"When the chief operator is not at the board, she can, if not otherwise engaged, hear what all the operators are saying. In larger exchanges, it is entirely different. Should the operators at the board desire to talk with the chief operator at the desk, an expensive and complicated call circuit is not necessary, in my estimation, as there will be an available line to the desk at all times. If there is not, the person at the desk is too busy to attend to any more than she has in hand.

"Lamp signals on the desk are very convenient, but they increase complications and until more than four lines are required I consider them superfluous equipment.

"At our next discussion, we will take up the common battery instrument circuit. It may require more than one evening for us to cover the subject," concluded Mr. Barrows.

(To be continued.)

A Trip Through Europe Just Ahead of the War Wave Crest

Vice-President and General Sales Manager of Western Electric Co., Who Arrived in New York, August 22, Tells of Conditions Just Prior to and After Breaking Out of Hostilities—Business Conditions and Emergency Relief Measures

By Gerard Swope

Sunday, the afternoon of June 28, the news spread through Berlin of the assassination of the Crown Prince and Princess of Austria-Hungary. Everyone was excited and the atmosphere of a beautiful calm day became suddenly tense, as the people made frantic efforts to secure the latest copies of bulletins which were being distributed gratis by the various newspapers. Even that same day people began speculating as to the morrow—the results in business, politics and future policies. The weeks following this tragic event were ominously calm, but as we went south about the middle of July, passing through a portion of Austrian territory on our way to Italy, we saw more signs of unrest and of wondering what the further disclosures would bring forth. Soon after were published the demands of Austria upon Servia with the request that a reply be made within 48 hours. The way the demand was couched seemed to imply that but one reply was expected. Even then articles began to appear in the Italian papers saying that if Austria and Servia went to war, Austria must not be allowed to seize more territory. This showed quite clearly the difference that might arise between Italy and Austria—both members of the "Triple Alliance."

When Servia's mild answer appeared, many thought war was once more averted, and were consequently stunned when, Sunday, July 28, rumors that Austria had declared war on Servia began. I was on my way from Rome through Milan to Paris at that time. But even before leaving Italy, the tenor of the earlier articles that had appeared in the papers, turned to speculation as to the probability of a wider conflict and the discussion as to whether in such an event Italy could, would and should remain neutral—with the opinion both in the press and among the people inclining to the attitude of neutrality.

Paris was full of exciting war talk and preparation, but even there, men close to the official life of France thought that the contest would be localized between Austria and Servia. They usually ended up with the statement, accompanied by flashing eyes, "but if it spread—France was ready." Tuesday, July 28, conditions still looked serious, but still all hoped war between the greater nations might be averted.

Reaching Antwerp on Wednesday, July 29, the scene was entirely different. There the air was full of rumors. The streets were crowded with soldiers hurrying to their appointed places. Several classes of the reserves had already been called out. To us Americans it seemed as if Belgium was seizing the opportunity of seeing how well their plans of mobilization would work. We still hoped that the war would not spread. The Belgian troops looked serious and their small field guns, mounted on the light steel, pneumatic-tired, wheels and drawn by dogs, looked ready for hard and immediate service.

Each day more of the reserves were called out, until by Friday, the factory of the Bell Telephone Mfg. Co. was partly empty of workmen and partly filled with soldiers. The government had requisitioned space to house 500 troops in the factory buildings.

Trying to do business and hold conferences, constantly interrupted by the blasts of the trumpets or the entrance of officers, was difficult indeed. Later in the day, we heard of the declaration of the "state of war in Germany." Some of our employes from London left that night, but as our work was not finished, we stayed over Saturday in Antwerp.

Late Friday evening, all telephone and telegraph communication between Belgium and Germany ceased, as well as the passage across the frontier of international trains. As an evidence that among business men hope of peace still remained, I received a telegram on Friday from Berlin that men from St. Petersburg and Berlin would meet me in London the following Tuesday. I have not yet heard another word from either, nor do I know how far they had proceeded on their journey, nor where they are now.

We left Antwerp for London by way of Ostend, Saturday afternoon, and Sunday morning our worst fears were confirmed—war had been declared. We left on the afternoon boat for Dover. It was a rough passage—the ship an old one, as all the newer turbine boats had already been requisitioned by the Belgian government, and very crowded, so that the passage was uncomfortable. We crept along fairly close to the coast and were stopped by the French fortress at Dunkirk. Here we lay in the rough sea for over an hour before we were allowed to proceed. We reached Dover very late, to find no accommodations available, as there had been such a large number of refugees from France that day. We drove over to Folkestone, where we found shelter for the night, and went up to London the next day.

In London, all was excitement as to whether England should join France and Russia, or remain neutral. The crowds were enthusiastic for war, but Parliament was still debating the question, amid much impatience on the part of press and public.

Sir Edward Grey's admirable statement on Monday be-

fore the Commons gave much light on a very complicated situation. On Tuesday, August 4, England sent its ultimatum to Germany, which on the next day was changed to a declaration of war. The temper of the people seemed to change almost over night. Now that Great Britain was at war, they seemed to be settling down to grim determination to face the seriousness of it, to go through with it and to make the best of it.

Many hundreds of Americans were stranded in London, and, as the first few days of the week had been declared bank holidays, it was impossible for them to obtain money. A committee of Americans, hurriedly organized, did splendid work in relieving distress and affording every facility to help those who had arrived and those still stranded on the Continent. Each day, notices of more ships withdrawn from service were posted—and more Americans were left without the expected transportation homeward. A rush was made to the few ships sailing under the American flag.

On account of the impossibility of drawing currency from the banks to meet the pay rolls, and the large number of workmen, foremen and men in the offices called out, the factories of the Bell Telephone Mfg. Co., in Antwerp and Le Matériel Téléphonique in Paris closed down entirely. It was soon realized that unless the factory could operate, even though on part time, the want and distress due to the war would be much increased by lack of employment. So it was determined to find ways of keeping as many of the people at work as possible. In many cases where the man of the family had gone to the front, the wife, mother, sister or daughter in the family was given employment.

Many plans were made to secure the necessary cash to meet the pay rolls. The government was asked to help by paying its accounts; the banks, to give out more currency. An attempt was made to secure exchange from London. Men were sent to Antwerp carrying currency. If necessary, it was decided to give workmen small checks and to assure the shopkeepers that, as soon as possible, the companies and the banks would redeem them at face value. Both the French and Belgian administrations looked with favor on this policy and both factories reopened with, of course, largely reduced forces. But how long they will remain open is for future events to decide. The Americans and English at those factories have come to London, and are all well and fairly comfortably housed. A few Americans, men only, have stayed in Antwerp and Paris—though C. H. Minor and his family are still in Paris.

Communication with Antwerp and Paris was still open, but much delayed. As mobilization is completed, it is expected that this will improve, but this will be affected by future movements of the armies.

The factory of the Western Electric Co., Ltd., is still operating under nearly normal conditions. It is hoped this may continue, but many of the men belonging to the reserves, or territorials, or who have volunteered, have gone to the front.

Conditions of life in London are settling down to a more normal basis, but, of course, evidences of the war are on every hand. The newspapers are small in size and contain only war news. The same stories, not varying much in detail, are printed again and again. The censorship is very strict. It is difficult to work on the assumption that conditions are normal, or will be soon again, as even in the midst of it, one is likely to be interrupted by new stories of a battle on sea or land.

Under date of August 24, I received a cablegram from F. H. Wilkins, the company's general manager in Europe. At that time there were about 500 people working in Antwerp and 200 in Paris. The prospects then were that operation could be continued for some time without receipt of raw material. Shipments from Antwerp were not feasible at that time, but were not an impossibility in the near future. The conditions in London were fairly normal.

September Morn

The Year's Awakening—The Opportunity

By J. C. Kelsey

Vacation days are over. The school teacher has returned, and the schoolboy is awaiting the dreaded sound of the school bell. He does not greatly approve of the aid tendered tourists, and is sorry that teacher did not get tied up in fistic Europe for a year to come.

The business man is ready for the fall trade. No longer will he doze or idly attend the baseball game on the stifling Summer day.

The human race, which began to expand or loosen up as the Spring came, has now begun to contract or tighten up for the contest of Winter. Fall begins the year. Spring begins its end.

Vacation days may be over for some, but there are many whose vacation days will extend far into the Winter. Years and years, as far back as one can remember, returning clerks, managers, directors and presidents, have placidly returned to work knowing that September Morn was the beginning time of the busy season.

But on Wall Street the scene has changed. The New York Stock Exchange and all others, of course, are still closed up. Furthermore there is no indication of opening anywhere—and the queer part of it is that the Stock Exchange members are not unwilling to keep the exchange closed. They are really well satisfied to do so, even if it does cost part of a fortune every day.

The average cost of conducting a brokerage house is not inconsiderable. It runs high into money—$1,000 or $1,500 per day is the average cost of operation.

Once realizing this cost, one would think that the chief ambition of Stock Exchange members would be to begin business—to earn commissions. But not one word of complaint, for the New Yorker calmly swallows his losses and waits. He knows that as long as the mine is closed tight the fire won't burn—and he is going to keep it closed.

There is a great and sufficient reason for this patient and watchful waiting. There is sufficient reason to stuff up the cracks and exclude all air from the hold of the financial ship. There is plenty of reason why an opening will sink the ship or cause the fire to burn.

That reason is old England.

England is the great trader of the world. Every part of the world owes England money at all times. She has

millions and millions of dollars flowing in from her debtors each hour and each day.

But England has struck a snag. A great percentage of her debtors are engaged in a grim war. Most of the debtors have taken advantage of the waratoriums, while many of them will be killed or bankrupted by the war.

England has bills to pay and she needs the money. America is practically the only big debtor that could pay for, or buy, what the English have to sell.

That is why Wall Street is taking a protracted vacation—one that reaches beyond the Morn of September.

England is paying out money. She has much to sell. She owns nearly $5,000,000,000 worth of American securities—bonds, stocks and lands.

If the New York Stock Exchange opened its doors, you would find the English seller lined up blocks deep at the door. It takes little imagination to see the effects of such a gigantic selling flood. That flood of selling would simply swamp the buying flood, and demoralization would be most complete.

Prices would go clear to zero. Banks and trust companies that loan money on these securities would soon find the value of the stock way below its market value. They would have to call the loans made.

Borrowers on stocks as security could raise little or no money at such a crisis. They would calmly bid the stock goodby and let the bank get out of it the best way it could. Ruin would be visible everywhere, because the House of Cards had started to tumble.

In such a condition as this, all the emergency currency in the world would not help. It would be beyond artificial aid. No wonder vacation periods are extended! They may extend into the cold, meager winter, and many a delicate hand will find itself calloused for the first time.

It will entail great suffering among many of the inhabitants of the $6,000 apartments.

New York never seemed so idle as today. Even at 2 o'clock in the morning one can find a crowd of several thousand watching the war bulletins—and the crowd which watches was never a crowd that you saw before.

They seem to belong to the so-called straw hat brigade—the class of men who never did manual work and would not know how to do it if compelled by want to seek it.

Another business seems to be on an enforced vacation. Ships of every flag and clime are in the New York harbor. Large and small, every dock is full.

The great Vaterland, nearly 1,000 feet long, idly tugs at its chains, seemingly chafing at its enforced rest. It looms high above and far beyond the other ships. It merely typifies the helplessness of the world when men fly at each other's throats.

The Custom House employes will have a vacation reaching far beyond September Morn. Busy Europe, so industrious and efficient, has cast aside its toys, gloves and other products. It has turned factories into armories, and the hammer, chisel and lathe all set aside for the rapid fire machine gun.

Even the Panama Canal—the eighth wonder of the world—built at tremendous cost, is lying practically idle, its occupation gone because there are no ships whose owners are willing to risk a chance meeting with a modern Alabama.

Everywhere the Kearsarges are watching for the Alabamas, so it pays simply to drop an anchor in a friendly haven.

Somehow the telephone business seems to need no haven of refuge nor does it have to dodge the privateer. People need telephones, not in a superficial fashion, but in a deep and lasting way.

A subscribers' list of a telephone system is a stable asset, and its shadows never grow less. Your subscribers' list changes rapidly even, for people do move and remove. Yet at the end of the year, whatever betides, the list of subscribers has increased.

In spite of the stability of the telephone business, no one can deny that we have had a fairly long vacation. We seem to have gotten into a fixed habit of patiently waiting for something to turn up.

There has been no boom in telephone matters since 1906 and 1907, and it is about time that another one began. There never was a more auspicious hour.

One cannot help but feel gratified at the turn of the great Ohio situation. The new company—the Ohio State Telephone Co.—starts out with a capitalization close to $23,000,000. It includes the exchanges in the cities of Cleveland, Columbus, Toledo, Dayton, Youngstown, Canton and 60 other good thriving localities.

It comprises, now, 95,000 telephone stations and a most comprehensive long distance system.

These underlying companies have been organized for nearly two decades and lack nothing in experience. With the Central Union (Bell) Telephone Co., in the hands of receivers, still waiting for complete instructions from the courts, no better time exists to make a start.

This applies to Indiana and Illinois, as well as Ohio. And it involves no danger of detriment to the opposing company—no loss greater than that already sustained.

That the new Ohio conception will be a great success, no one has any doubt.

Indiana has been taking a vacation, too. I was surprised and gratified that the Indiana Independent Telephone Association had adopted September as its convention time, and is going to resume. There is much to do in Indiana—plenty for a strong association to grapple and try to solve.

No association should be allowed to run down or take a rest. It should meet each year, even if but a small guard attends.

Any telephone company which feels it cannot afford to send a representative to a state or national convention is making a penny-wise and pound-foolish mistake. Every business on earth, these days, has cause to organize strong associations. There are many effective bodies, too.

It is possible that your directors have lost interest since the danger of invasion has gone by. But let them make no mistake, for the dangers of dry rot are greater than any damage done by an invading competition.

It is a natural thing to rest after a great exertion, but the rest must not take too long. We have just about half the number of telephones we should have. Of course, it requires money to put in new telephones, but the time has come when the money can be raised.

Telephone interests are no longer at war. That is a point in favor of telephone finances. Telephone interests do not depend upon open stock exchanges and the competition of listed stocks thereby is eliminated. All we need is a determination all along the line to show up telephone securities in their true light.

Speaking of war: I think Iowa, as well as Ohio, Indiana, and other states, had as vigorous a fight over telephone mat-

ters as was ever waged. The Iowa Telephone Co., the Bell company, was practically wiped out as an earner. It looked a total loss. But the management kept courageously at the game with unlimited money—buying competitors, building toll lines and such.

Today, the Iowa Telephone Co. is really an earner. It pays near 8 per cent., after taking care of depreciation. Its capitalization is relatively low, having had the excesses charged off during the late years. Yet the Independents have three telephones to their one—and all are relatively happy.

The conditions in that state are practically settled. Iowa buys more telephone apparatus today from Independent manufacturers than it did in the days of war.

Surely some lesson may be gleaned from this.

The Bell company is surrounded by telephone companies, having 200,000 more telephones than itself. Neither side is uneasy, and everyone is making money or should do so with due diligence.

It shows us that apparent defeat is only temporary, if one is determined to stay in the telephone business, or in any other enterprise. It required great courage to try to revive the Bell company of Iowa. But it was done, and the plan has succeeded without detriment to either party.

Compare Iowa, where conditions are unsettled, to other territories where they are not. It is a queer commentary that less goods are sold to telephone companies where war exists. It all tends to prove that the greatest prosperity comes when all sides are making a little money.

It is conceded by economists that there is really room for two telephone companies, and that no reason exists why there should be a fight.

The old idea of monopoly has been losing ground these last few years. Monopoly has received some terrible hard bumps, especially in New England.

You don't hear complaints about two telephone companies in Kansas City, St. Louis, Philadelphia and Minneapolis. There is plenty of room for them. But no one would countenance a new telephone company in New York, with its half million telephones. Nor would anyone care to finance a second company at Logansport, Lafayette, or Ft. Wayne, those Indiana strongholds of Independence.

Finance has been learning some lessons, particularly that universal telephone service has its place, as well as the locally owned one. Each has its proper function of usefulness.

Today there is nothing in the telephone situation that finance should fear. The telephone industry is of age. It came into its own without much help. It has practically eliminated war, if not all waste as yet. There are a few places where conditions are in an unsettled state, but they are in the minority.

It is surely a good time for the financiers to spend their vacation looking into the telephone. They will never find an investment more to the liking of finance.

The failures are few, and even those are due to mismanagement. The fight is over, and the enemy is willing to acknowledge that their ideals are really yours, and both are entitled to equal consideration.

The telephone war was really one of ideals. Both sides sought the public ear and taught that service was the goal. Why should they fight with weapons of war? The weapons of peace are more effective and more generous to your stockholders.

On this September Morn, as you look out of your office window at the passing throng, be sure to wonder to yourself if you are as tightly closed as the New York stock exchange.

You have no deluge to fear. Simply stop your vacation, open wide your exchange, and arouse your directors and stock holders who have lost interest since danger has passed.

The school teacher is back. The business man is ready for fall business. The whole town is waking up, getting ready for the winter season.

Show your appreciation of peace by hustling a few additional subscribers and turning in some good construction orders. Show your appreciation of a psychological hour to get your finances in order. Cut down your loans in the neighboring city bank, and sell your securities in small lots to your local people.

Who would put $10 in a savings bank at 3 per cent., when he could buy a sure 7 per cent. preferred stock or 6 per cent. bond-interest, payable semi-annually—of like size?

We have shot over the heads of our best investors. Nothing it too small.

Sell the school teacher a few small preferred shares—she won't go to Europe next year. Sell the busy man, the farmer, and the doctor some good negotiable paper—it can be made that. Why can't business men use your paper as reserves as well as others? It is your problem, and you should solve it. Let this September be a memorable one.

MORAL: Wake up!

Opposition to Measured Service in Portland, Ore.

City Commissioner Daly, of Portland, Ore., recently sent a communication to the city council recommending that the Pacific Telephone & Telegraph Co. be compelled to re-establish all rates which have been abolished in the past, including a rate of $1.25 a month for 10-party service. The rates referred to by Mr. Daly are all specifically mentioned in the company's franchise and it is asserted they should be enforced.

In regard to the 10-party service the company announced that this was neither satisfactory to the company nor to its patrons and agreed to establish in its place a service whereby each user has 30 calls a month for $1.50 and an additional three cents for each call over 30. This rate met with the approval of the council and the company put it into effect. Mr. Daly now says he fears the company will attempt to put all service on a measured basis, which will mean, he says, that patrons paying $2.25 a month for unlimited service will be paying probably as much as $5.10 a month, the increase being due to the calls in excess of 30 a month at the rate of 3 cents each.

Wisconsin Commission on Telephone Accounting.

In March, 1914, the Interstate Commerce Commission submitted a tentative classification of accounts for Class C and D telephone companies to the Wisconsin Railroad Commission and asked that the latter body criticize the classification of accounts before its finally adoption by the Interstate Commerce Commission. The Wisconsin Railroad Commission has prepared a brief in which it points out certain objectionable features of the classification of accounts. The railroad commission, in general, works on the theory that it is necessary to classify and segregate the accounts so as to determine the cost of different services.

New Independent Exchange at Shamokin, Pa.

The United Telephone & Telegraph Co., of Harrisburg, Pa., recently cut over to a new common battery exchange at Shamokin, Pa., in connection with which construction work has been in progress since early spring. The new switchboard is equipped with 1,000 lines for present use and has a capacity of 3,000. The exchange is centrally located, occupying one floor of the Helfenstein Building, is handsomely furnished and modernly equipped in every detail.

Queries on Theory and Practice

Losses in Transmission on Long Distance Line.

We have a long distance line, 53 miles between terminals, which is made up of 9 miles of No. 10, B. & S. hard drawn copper wire on large double petticoat porcelain insulators, between the first two stations; the remainder of the line is of No. 12 BB iron wire on pony glass insulators on brackets at an average distance of about 16 inches apart.

The trouble we have is poor transmission and difficulty in ringing through. The distances between stations are shown

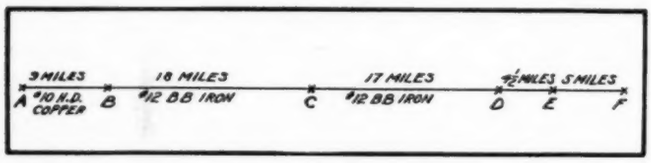


Diagram Showing Line Conditions.

on the diagram. Transmission is fairly good in either direction from station *C*, and rings from either way are received pretty strong. This line has been in operation for about nine years and has never been what would be called a success, as this same trouble has always bothered. We think that the line is too long for the size of the wire, but it seems that it should do better than it does, considering that here are only six stations on the line. We are going to cut out the condensers at the stations.

There is another condition that I would like to know about. We have a connection agreement with the Bell company to connect with their lines at station *D*, which is about 10 miles from *F*. Will the condenser effect of the line running past station *D* interfere with a conversation when the Bell line is connected to our line at this point? If so, will it not be better when the condensers are cut out at the stations? A cut in station would be best, of course, but the operator at station *D* does not attend to the connection properly and we are tied up on getting past on our line. The line from *B* to *F* is transposed every mile, while the copper section is transposed every 2,600 feet. This copper section was only cut in a few weeks ago, but it did not benefit the rest of the line, except in giving excellent service between *A* and *B*.

Your toll line has at least 15 miles loss (standard cable), which is half of the commercial limit. If your telephones are at times a little weak, or do not get enough current for their transmitters, it is easy to lose an additional 10 miles which will bring about the condition which you describe. It may be that there is a loss in the through connection at *B* (copper to iron) or your iron line may have some corroded joints. Measure it up and check against the known resistance of BB iron wire. Leakage may account for part of the loss.

Condensers in the bell circuits at the stations will not affect your transmission appreciably. The capacity of the Bell line, tapped onto your line at *D*, will, of course, add to your loss, but that cannot be helped. Keep the two lines (Bell and your own) cut apart, except when using both for a through connection.

Portable Telephone for Deaf People.

I would like to know how to make an ear telephone for a deaf person who cannot afford to pay the large sum for a small outfit. Of course, I do not look for the same results as from an expensive outfit, but would like to change the equipment of an uptodate magneto telephone so that this person could use it to advantage and carry it with him.

Use an operator's watch case receiver with headband, so that it can be worn on the head of the deaf person. Place in series with it, two or three small dry cells and any good common battery transmitter. The cells could be the little ones used for flash lights. The transmitter should have its damping springs removed, also some of the carbon granules.

You will need to do some experimenting to get results, for it is not the easiest matter to get the correct adjustment of the transmitter for sensitive action. Since the battery current flows through the receiver, you should pole it so that the current will strengthen the permanent magnet. To do this, reverse the terminals of either battery or receiver, and use it which ever way sounds louder.

Capacity and Discharge Rate of Exchange Battery.

What is the rule for figuring the size or capacity, and the discharge rates, of accumulators suitable for main and private branch exchanges, for both manual and automatic plants?

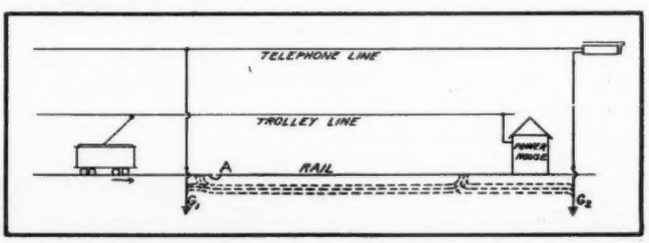
There is no general rule. Each maker of telephone switchboards has found by experience the size of battery necessary for his apparatus and has made out a table of battery sizes for each size of installation. For some types of automatic switchboards, the storage capacity in ampere hours varies (depending upon the equipment) from 7 to 14 per 1,000 lines per call per line per day, plus a fixed amount per 1,500 lines for accessory apparatus such as ringing machines, alarms, natural losses, etc. Thus if the rate be eight ampere hours, a 2,000-line office having a calling rate of 10 calls per line per day, would require $8 \times 2 \times 10 = 160$ ampere-hour storage capacity. To this must be added about 90 ampere hours for general apparatus, making a total capacity of 250 ampere hours.

Grounded Telephone Lines and Electric Roads.

We have a small magneto system. About 25 lines are grounded, some of them being eight miles in length, the remainder, about 90 lines, are metallic circuits. There is an interurban electric line running past about three-quarters of a mile of our cable and the cable crosses the track underground in two places. When the cars pass here, nearly all the grounded line drops are thrown. This does not happen every time that the cars pass, some days not at all, while some times every car passing during a week, will throw the drops.

We have grounded our carbons, racks and cable cans about three-eighths of a mile from the electric railway tracks, and have grounded the cable sheath in many places. When the voltmeter is put between the sheath and the rack ground a reading from four to eight volts is obtained. Sometimes, when the meter shows eight volts, the drops are not thrown, while sometimes four volts will throw them. Any advice that will cure this trouble will be thankfully received.

Your trouble probably comes from high resistance joints in the railroad tracks, as indicated in the accompanying drawing. Most of the current which returns from the car, follows the rails. The presence of a high resistance joint at *A* will cause some of the current to leave the rail on the car side of the joint, flow through the earth and enter the rail again toward the power house. Since the telephone line forms a conductor from one ground rod, G_1, to the other, G_2, part of the current will be diverted through the line and switchboard drop. We have seen this effect on earth return lines. The remedy is to make the joints good.



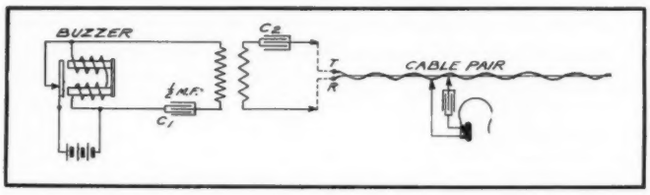
High Resistance Joints in Rails Divert Current to Earth.

The fall of potential, or voltage, across a joint should be as low as that across three feet of rail, assuming equal current flow in each. You can, of course, make the lines metallic, but

it is cheaper to perfect the rail joint bonds, even if you have to pay for it yourself. A little tactful work with the railway company officials may cause them to do it.

Common Battery Cable Testing.

Please publish circuit with description of method of testing for the identification of individual wires and pairs in a working common battery cable without interfering with the service on any line in the cable. Also can a regular operator's head receiver be used as a good substitute for a detector with a tone test on the sheath of cable in which there is a ground, loop cross, etc.?



Buzzer Connections to Produce Alternating Current.

To pick out or identify a pair of wires in a working cable, requires that the current placed on the desired pair shall not be of such a nature or strength as to interfere with the operation of adjacent pairs and, as far as possible, of the pair itself if it be a working subscriber's line. Also the means used for detecting the pair at the far end should not interfere with the working lines, to which it must necessarily be connected momentarily while hunting for the desired pair.

Alternating current generated by some such device as the buzzer shown in the illustration may be bridged across the pair at *T. R.* without interfering with the transmission of signals from subscriber to operator. Of course, if the tone be strong, it will not be easy for the subscriber to talk.

To use the test, first apply it to a known line and let the tester accustom himself to the loudness of the tone. It should not be loud enough to make much noise on other pairs. Then let the tone remain on the line while the repairman with a head receiver and condenser goes out to test by getting across pair after pair until the right one is located.

When the pair has been located, the repairman can signal the operator by short circuiting his condenser. The usual micro-telephone set will facilitate talking. A relay may be bridged across the pair so the repairman can get the wire chief direct. If the line must be kept in service, the wire chief can wait across the pair with a condenser in series with his talking set.

The regular operator's head receiver can be used for this test, though not wound specially to suit the exploring coil with which it is used. It will not be quite as sensitive as the regular set used for the purpose.

Practical Subjects—Letters and Discussions

Super-Service in British Columbia.

Service which gives all that is essential to ordinary requirements and then provides also for emergencies, may be termed super-service.

The British Columbia Telephone Co. in its desire for an actual continuity of service has arranged that 25-hour service shall obtain over its entire system. Though the rural district telephone subscribers of this company may go to bed with the birds, and the probabilities are that the majority of them do, the night operator of their particular exchange will be wakeful in their interests while they sleep.

As fast as arrangements can be made, every exchange is being manned for continuous service. Such continuity of service is an assured protection and creates a sense of safety. It should prove a strong argument to prospective rural subscribers and to those in the smaller villages and towns, to install the telephone service.

Letters to His Old Boss.

Bessemer Hump.

My Dear Pinder:

I see from your last letter that your difficulties appear to multiply. You say that when the proposed rates are instituted, you will have to start some business as a side line in order to make a living. I don't see how you can blame the commission for that condition. You admit yourself that it has fixed the rates so that you are assured a reasonable return on your investment. If what you realize is not sufficient to keep you in comfort, that is not their fault.

To argue whether it has a right to say how much you shall charge for service is useless. The law says it has. Your position in the matter reminds me of one of Mark Twain's little anecdotes. It is about the tramp who was riding on a train without a ticket. He maintained they could not put him off between stations. However, they slowed the train down, and threw him off. As the train started on, he was still shouting that they could not put him off.

That is the sort of obstinacy you display to a certain degree, it appears to me. You have made so many foolish protests to the commission's proceedings, and annoyed the members so much with unreasonable arguments that, when you have anything meriting consideration, they not unusually give it scant consideration.

Now about those vacant lots. I think you are wrong in maintaining that they are telephone property; that is, that they have even a remote relation to establishing rates.

You say one lot was inherited and you bought the two adjoining ones some years ago. Omitting further details, consider how such an item is generally regarded by courts and commissions.

When a public utility holds vacant property to be a part of its investment almost the first questions to be decided are: "How was it acquired, and for what purpose?"

There are three principal ways of acquiring property, namely, by purchase outright, by inheritance or gift, or by trade, which would include settlements of claims or judgments.

It can be readily seen that only the first method has any direct bearing upon the question as to the purpose of acquirement and continued possession. For the sake of argument, which is a poor excuse, we will assume that you bought all three lots outright. You claim to have done so, in the case of the two lots with the hope, or rather the idea, that an exchange would be necessary in that locality in the course of time. At best it was merely a guess on your part.

It is unfortunate that taxes and special assessments are falling due just at this time, making an item which, if covered by your rates, would affect them materially. Special assessments for street improvements are different from regular taxes. Any local improvements generally increase the value of real estate and therefore form an additional investment. Even if you use this property for exchange purposes later on, the public has no interest in paying for improvements at the present time.

Then again, should that section of the town improve to such an extent that an exchange becomes necessary, you will find the value of the property will increase to cover your special assessments, etc. On the other hand, the prop-

erty may not be in the exact location for an exchange and you may find it necessary to sell it and buy other property, or to exchange it outright.

I think if I were you, I would carry it along as a separate investment and let future developments work out the most profitable method of disposing of it.

I presume my turn will come soon.

Little Dudley.

Couldn't Be Done; and He Did It.

Some time ago, while holding a position in the efficiency department of a large telephone company, says D. B. White, in The Tri State News, published at Corinth, Miss., I was assigned, by the vice-president, to do some "missionary work" in a district entirely new to me. I was informed that the company's property in this district had been in existence 10 years, that it had been built according to the best methods of that time and had never brought any returns to the investors. They had tried seven managers with the result that each year the business dropped off and the plant deteriorated faster. I was given permission to employ any methods I cared to use towards rehabilitating the property. I was also given a synopsis of previous methods tried and the encouraging report, that due to strong competition and poor toll facilities, all of the managers as well as other officials had reported so often to the effect that "it can't be done" that the vice-president was almost at the point of believing them.

Before leaving I made arrangements to conceal my identity in the new territory and soon after my arrival became intimately acquainted with the manager. My object in representing myself as a stranger to the telephone company was to better study the then existing conditions and learn why the property was in such a deplorable condition. At the end of six weeks I notified our main office to advise the manager that I was to take his position and that he would be subject to my orders.

The first eight months were spent in reorganization. Old systems and methods were either perfected or abandoned. New routines, reports and systems were established, which gave the manager all of the conditions and details necessary. The heads of the various departments were given absolute control of their respective departments, with the understanding that it was entirely up to them to see that the new methods were properly placed in effect and the desired results produced. These department heads took to this new responsibility "like a fish takes to water." From observation I have learned that the majority of employes would rather have more responsibility and more authority with less pay than to have more pay and less responsibility and less authority; so the functional organization thus established produced more efficiently with less labor.

Transportation, printing, collections and plant conditions were each carefully studied. An automobile displaced two horses, a bicycle did away with street car travel, a mimeograph cut the printers' bills and the amount of outstanding collections was reduced from 36.4 per cent. to 11.8 per cent. In fact the saving on labor and above mentioned items amounted to a 4¼ per cent. dividend.

At the end of the first year our service was greatly improved and far superior to that of our competitor. We managed to hold enough of our old subscribers and gain enough new business to keep about even. Heretofore the securing of new business had not received our attention as we did not care to handle it until we could properly take care of our old subscribers. When we were ready to take on new business, the citizens weren't ready to become our subscribers. We tried every possible method to win them to us, but our success was of no consequence. We advertised lavishly. To all of our advertising and stationery we printed our slogan: "Watch Us Grow"—but we didn't grow. Here at last was the reason our stockholders weren't getting any dividends. It looked as though the people did not want our service, no matter how good it was, or how efficiently and courteously we conducted our business. "It Can't Be Done." It certainly seemed that way.

One Sunday morning I went to church feeling mighty "down in the mouth." That's not the proper way to feel about going to church, I'll admit—but that's the way I felt just the same. The choir sang terribly poor that morning. The heat was terrific; it seemed to me that churches should be equipped with electric fans. The windows were open and not screened; surely all of the flies in the community were trying to make my acquaintance. As a result of the music, heat, flies and my bad state of mind, I did not remember much about the services, but I did remember the minister announcing an ice cream social to be given by the ladies' club of the church on the following Wednesday evening and urged that all attend, as the ladies were trying to raise money for some church improvement.

I went to that ice cream social, met the president of the ladies' club and arranged to attend their next club meeting. I knew the ladies needed money and we needed telephone subscribers, so when I met them I offered to give them the first month's rental on all new yearly subscribers they could secure for the telephone company. In less than two weeks those ladies had secured so much business for us that we had to put on three short line crews and have all of our material shipped to us by express. Those ladies did more for us in two weeks that I could have done in two years.

"It Can Be Done." I should say so!
"Just buckle in with a bit of a grin,
Then take off your coat and go to it:
Just start to sing as you tackle the thing
That 'cannot be done'—and you'll do it."

What if Iron Were Non-Magnetic?

If iron were non-magnetic, by some freak of nature, without otherwise losing its mechanical properties, our modern civilization would collapse. The possibilities have recently been stated by Prof. J. A. Fleming. Crowds would go as usual to their railway stations, metropolitans, tubes and main lines, only to discover that no electric trains are running. The dynamos at the supply stations would all have ceased to act. Officials would frantically endeavor to find out why the current was cut off, but all telephones and telegraphs would be dead. No electric light could be obtained, no electric bells rung by current from generators; no taxi cabs or motor buses could move because their magnetos for the same reason would be perfectly useless. No main line trains would run because all signals would be unworkable.

No anarchist, in his wildest dreams, could imagine a more complete knockout blow dealt to our civilization than would thus be effected. Darkness, starvation and unemployment would in one month reign in all great cities. All shipping would be sealed up in port, or lost on the high seas, because the compasses had ceased to direct. Factories would be idle and electric power supply cut off at the source. All business would be arrested. Truly the losing of iron of its magnetic properties would be a great calamity.

Keep the Downspouts Open.

The downspouts at the telephone exchanges at Madison, Ind., recently became stopped up during heavy rains, and the exchange was flooded in the night. The accident put several hundred telephones out of service.

A Study of Systems of Charges for Telephone Service

Fundamental Principles of All Systems of Charges—Seven Systems Classified—Discussion of Each Class—Existing Systems as Examples—Demand, Quantity and Time the Three Basic Elements of Cost—Equitable System Should Embrace All Three—Some Proposed Systems

By L. C. Tomlinson

The fundamental principles upon which all systems of charges now in use, or which may have been used, are based, no matter how simple or complex they may appear, are, as has been stated in Electrical World of April 11, 1914, page 830, as follows:

Unmeasured..... { Unrestricted / Restricted..... { Time / Place

Measured..... { Demand (maximum rate of consumption) / Quantity (consumption) / Time

The unmeasured system of charges in the majority of cases is only used satisfactorily while the supplying company is developing a new service. As this system of charges permits expediency to become a ruling factor, it has no justifiable right to be used after the service has been developed. Expediency cannot be a dominating factory if the system is to be equitable to the consumer as well as to the supplying company.

All the measured systems of charges have, as a base, one or more of the three principles of cost. There are seven such systems. Of these seven, one has all three principles as base, and is, therefore, the fundamental system of charges, the other six being only partially fundamental. The degree with which the latter approach the fundamental system depends upon how nearly the principles of cost used as base, approach the total cost of supplying the service.

These seven systems of charges are divided into the three following classes:

Monadic, which involves measurement by only one of the fundamental units, either demand, quantity or time;

Dyadic, which involves measurement by two of the fundamental units;

Triadic, which involves measurement by all three of the fundamental units.

The monadic and dyadic classes have each three systems of charges, the partially fundamental; the triadic class has only one system which is the fundamental system.

The Monadic Class.

The monadic class of charges is liable to be inequitable to either the supplying company, the consumer, or both. This system might favor some consumers with particular requirements more than others having different requirements, and in so doing it would unjustly discriminate against the latter. The true cost of supplying the consumer is not known because the costs of supplying telephone service are not equitably apportioned among the consumers, who have different requirements as well as various methods of usage of the telephone. This system, not being a complete measure of the cost of the service, gives no definite way of knowing how much the two neglected principles of cost affect the total cost of supplying the service to a particular consumer. Some consumers will pay an undue amount of the expense and profits of the supplying company, while others may not reimburse the supplying company for their proper share.

"Demand System" of Charges.

The first commercial use of the telephone was for private lines which connected two or more places of business, residences, or a residence and a place of business. In the majority of cases the line was owned by the parties whose places were connected and the instruments were rented from the original patentees for a definite sum per annum.

This method proved unsatisfactory as soon as a number of lines were so constructed as to terminate in a central office where they could be connected to any other terminating line when so desired. There was an element of cost for labor for the connection of lines, and for keeping the lines in repair, and a cost for the switchboards and the consumers' station or telephone instruments. Thus the rental, which at first applied only to the instruments, became, as the art progressed, a charge for the service rendered by the supplying company to the consumer.

Therefore the consumer came to be charged a stated sum per month, quarter or year, for the telephone service, that is, for the use of the telephone instrument, lines and central office equipment, and for the labor of making the necessary connection between his line and that of the party with whom he wished to talk. He was not restricted in regard to the number of messages originated at his station, nor in regard to the time when they originated, except that the earlier central offices were not operated at all times.

The rental was based on the demand that was made on the supplying company. The unit of this demand was one station instrument and all the equipment and labor necessary for rendering, satisfactory service. This unit has been commonly designated the telephone.

In Modern Heat & Light of September, 1887, page 158, Thomas D. Lockwood states:

> Rates were given, upon which the lines certainly had to operate at a loss, but the business was new, and this was not seen until later; $36, $24, $22 and nothing per annum were charged.

The Electrical World of January 26, 1884, page 29, gives the following item regarding the consolidation of the different telephone companies located in New York City. In speaking of the Law system it says:

> They charged $17.50 a month at first, but when the Metropolitan Telephone Co. began to compete they charged new subscribers $15. The Law charge has, however, always been willingly paid, as the service given by the company is confessedly of a first class character, highly satisfactory to the subscriber.
>
> The Metropolitan company has about 3,500 subscribers. Their charge is $12.50 a month.

The charges first used were not sufficiently remunerative, however, as the telephone system grew and it soon became necessary to increase the charge per telephone.

The method of charging the consumer a stated sum per month or year, as illustrated by the above examples of early systems, is purely a demand method of charging. The consumer has at his command the station instrument, commonly called the telephone, the line from his station to the central office, and all the central office equipment required to connect his line with the line of any consumer with whom he wishes to talk, also a definite amount of the labor which is necessary to keep all of the apparatus at his command in repair and also that which is required in connecting his line with other

lines. The charge is the same when he is away and does not use the telephone as it is when it is in continual use.

This charge is similar to the taxes upon real estate, in that they both depend upon the value of the property and not upon the use to which it is put. The consumer pays for the continual use of a certain portion of the telephone plant which should be continually kept in a satisfactory operating condition; that is, he pays for the maximum amount of demand that he can make upon the telephone system. This system of charges has been called the "flat rate" or "unlimited service rate" by the majority of persons writing upon the different systems of charges and by the telephone companies.

The two following examples, although modern, illustrate the rental or demand system of charges first used where the consumers were unjustifiably divided into two classes, business and residence, as was discussed in TELEPHONY of March 14, 1914:

Party lines, residence and farm telephones...$12.00 per annum
Party lines, business telephones.....$15.00 per annum
Single lines, residence, farm or business telephones not to exceed one-half mile in length of line .....$18.00 per annum
An extra charge to be made for construction and maintenance where single lines exceed one-half mile in length.
Non-subscribers, per call..... 10 cents
Business telephones, individual lines.....$ 2.00 per month
Residence telephones, individual lines..... 1.50 per month
Business telephone, four-party selective lines.. 1.50 per month
Residence telephones, four-party selective lines 1.00 per month

The following example illustrates the competitive demand system of charges where no discrimination is made between consumers. In this form of bill a discount is given for prompt payment.

Single line in village, $18 per year, with discount of $5 per year for payment quarterly in advance.
Party line of six or less, $18 per year; same discount.
Party line of 10 or more, $15 per year; same discount.

A small discount, in most cases 25 cents a month, has been and is now sometimes given for prompt payment. The consumer in a district where there was competition had to be coaxed to pay his bills, the old method of forcing him to pay by discontinuing the service being impractical, since if one supplying company disconnected his service he could go to another.

The demand system of charges has retained its strong hold upon telephone companies on account of its seeming simplicity and unfailing popularity with the majority of consumers who have persistently demanded an unlimited number of messages notwithstanding the extra heavy charges that the supplying company has been thereby compelled to place upon all consumers alike.

QUANTITY SYSTEM OF CHARGES.

The generally accepted meaning of the term toll or long distance, when applied to a telephone message in America, is to designate a connection between the lines of two parties whose respective stations are parts of different telephone systems. The lines connecting the different systems are, in the majority of cases, owned and controlled by separate companies, therefore the charge for this kind of service is a separate charge from the local one of each of the parties conversing.

The toll or long distance charge is a pure quantity charge. A definite sum is charged for a unit of the service. This unit consists of the use of the line and the other necessary equipment for transmitting the conversation for a definite period of time, which is supposedly the time required for the average conversation. The consumer pays for a given quantity of service which he purchases whenever he has need of it.

The universal practice regarding pay stations, both private and public, has been to charge a given sum per message or call. It is purely and simply a quantity charge, the demand and time principles not being taken into consideration.

In the large metropolitan telephone systems the quantity of service is not the same for all consumers, some requiring a large number of messages per year, while others require only a few. Under the demand system of charges where all consumers have to pay the same charge, there is a great tendency to especially favor some of the consumers for the purpose of obtaining new consumers. The supplying companies are, moreover, finding the flat or unlimited system unprofitable owing to the rapid development of the art and the necessary extensions attendant upon it.

The repeated agitation and continual clamor for reduced charges for telephone service caused the supplying companies to offer a system of charges based upon the number of times the consumer used the service. The telephone companies were using a "charge per call" or a quantity system at their pay stations, and, without trying to devise a new system, they took the old pay station system and built up therefrom a supposedly new system.

Annual Business Rates.

One party line, measured, 960 calls, within eight-mile radius $48
Additional calls within same radius, 3 cents each.
One party line, coin box.....$60
(Guaranty to include metropolitan tolls.)
Two party line, measured, 840 calls, within eight-mile radius $42
Additional calls within same radius, 3 cents each.
Four party line, coin box.....$36
(Guaranty to include metropolitan tolls.)

Annual Residence Rates.

One party line, measured, 900 calls, within eight-mile radius $45
Additional calls within same radius, 3 cents each.
Two party line, measured, 720 calls, within eight-mile radius $36
Additional calls within same radius, 3 cents each.
Four party line, coin box.....$24
(Guaranty to include metropolitan tolls.)

The foregoing illustrations show the quantity system of charges where the consumer is required to use the service a given number of times per year at the regular rate of five cents per call. A reduction is given for all additional calls. This is a simple quantity system of charges with a reduction given on quantity and a minimum charge. This minimum charge, which is different for residence and business consumers as well as for different classes of service, is not a part of the system of charges.

The supplying companies had become so accustomed to receiving a definite income from each consumer that they could not sanction the methods of the economical consumer. The bill-maker came to the rescue of the companies by incorporating in the system of billing a minimum charge clause. This clause required the consumer to use the service a given number of times per month or year.

The following illustrates a simple quantity system of charges when no difference is made between business and residence consumers.

One party line, measured, business or residence, 600 calls yearly $60
Next 300 additional calls, 5 cents each.
Calls in excess of 900, 3 cents each.

All these systems of charges have as bases only the quantity principle of cost. The demand and time principles are not considered of enough importance to enter into the system.

TIME SYSTEM OF CHARGES.

There appears to be no recorded instance where a system of charges having the time principle solely as a base has been formulated and placed in practical use by a company supplying telephone service.

The Dyadic Class.

The dyadic class of charges has two of the three principles of cost as a base, and for this reason is more equitable than the monadic system, since in most cases it more nearly approaches the total cost of supplying the service. As the expenses of supplying the service are more equitable, and as no consumer is required to pay an unduly high price to help defray the expenses caused by consumers favored with a low charge, there is less opportunity for unjust discrimination. When the two principles of cost, which dominate the cost of supplying the service, are used as the base in formulating the system it approaches the triadic system in justice and equity, but if one of these two principles is of minor importance it is on the plane with a monadic system.

Demand Plus Quantity System of Charges.

An example of a demand plus quantity system of charges is presented in the following schedules which are taken from the British House of Commons report on "Telephones," ordered printed by the House November 21, 1910:

Measured Rate for Local Service.

London areas (Post Office and National Telephone Co.) exchanges in County of London:

I. Annual subscription £5
II. Charge for each originated call..... 1 d

The minimum payment for calls is 30 s. per annum.

Exchanges outside County of London:

I. Annual subscription £4
II. Charge for each originated call..... 1 d

Junction fees, for each originated call to an exchange in another group ..... 1 d

From the same publication the French telephone charges are given as follows:

Measured Rate for Local Service.

This rate is offered only in towns of 80,000 or less inhabitants.

	£	S
I. Annual subscriptions:		
1st year	4	0
2nd year	3	4
3rd year	2	8
4th year	1	12
II. Charges for each originated call.....	1 d	

Junction fees between exchanges in the same canton, or between exchanges connected by lines not more than 15½ miles long, the charge for a call of three minutes is ..... ½ d

The annual subscription of £5 is the demand charge while the message fee of one penny is the quantity charge.

In this system the demand and quantity principles of cost are each given their proper consideration but the time principle is neglected.

The demand plus quantity system of charges has met with favor in European countries but it has not obtained popularity in the United States and Canada. This may be accounted for by the consumers' satisfaction with the systems that are at present in use. The consumer is led to believe that the so-called "multi-charge" systems of charges are detrimental to him as well as inequitable and that he would receive more and better service if the old system of charges remained in operation, while in fact the "multi-charge" systems of charges are more beneficial and equitable to the consumer in reality.

Demand Plus Time System of Charges.

As soon as the telephone service became a necessity and practically indispensable to the home as well as the business life, there arose a new condition. The telephone was a social convenience as well as a necessity in the summer home during the residence season but was of little use during the period of non-residence.

The telephone companies supplied the service at a given sum per month or season. The station instrument had to be installed at the beginning of the summer and then removed at the end of the season. The same thing had to be repeated each year. The expense of installing and removing the station instruments would be eliminated if the consumer could be induced to retain the service during the winter season. Therefore a system which recognized the demand and time principles of cost was formulated.

An example of this system is presented in the schedule of charges published and used by the People's Telephone Co., of Fox Lake, Wis., which is as follows:

For Fox Lake the rates are $1 per month for business, residence and grounded rural lines.

Season service for four months, from June 1 to October 1, $12.50, or $24 per year.

Summer service on First Island for four months, $10, or $15 per year.

This system of charges divided the year into two seasons, each having a different demand charge. Such a system favors the retention of the telephone throughout the year and thus gives the consumer the desired service at his summer residence during the winter if he requires it. This system of charges recognizes the demand and time principles of cost.

Quantity Plus Time System of Charges.

The telephone companies maintaining a toll or long distance service, being natural competitors of the telegraph companies, followed in every way that they possibly could the system of charges used by the telegraph companies. The telegraph companies, for the purpose of increasing their business and at the same time more uniformly distributing the messages over the whole day, gave a reduction in charges for messages sent during the night. The telephone companies operating toll lines soon saw the advantage derived from this night system of charges by the telegraph companies and formulated a similar system for the telephone industry.

The day was therefore divided into periods and for each period there was a different charge for the same quantity of service. Such a system recognizes the quantity and time principles of cost.

The Triadic Class.

The triadic class of charges has as a base all three principles of cost. All the principles are considered, and each receives the proper position due its importance. Each consumer pays his proper proportion of the profits and expenses and all consumers have the same rights and privileges. Thus discrimination is reduced to a minimum. This class of charges is reasonable to both the consumer and the supplying company because it considers all of the factors that enter into the cost of supplying the consumer with the service. The triadic class is the only complete class of charges because it considers every principle of cost.

Demand Plus Quantity Plus Time System of Charges.

In all of the recorded data available of charges applicable to the telephone industry no mention is made of a system having as a base the three principles of cost, namely, demand, quantity and time.

As these three principles have been successfully combined in pairs to form the dyadic system of charges, there is no apparent obstacle to prevent the formation of a triadic system by a logical combination of the three principles of cost.

To make clear the triadic system of charges as applicable to the telephone industry, a hypothetical system of charges will be formulated by combining the salient features that have already been used by telephone companies.

By combining the demand plus quantity system of charges employed by the British government post office and the demand plus time system used by the People's Telephone Co. at Fox Lake, Wis., for season or summer consumers, a triadic system can be easily formulated. Such a system would be as follows:

(1) Charge per telephone from June 1 to October 1..$....
(2) Charge per telephone from October 1 to June 1..$....
(3) Charge for each originated call..... ....cts.

The above system has the time principle of cost operating in conjunction with the demand principle. This system is applicable to a condition where the time principle varies with the season. Another system would be:

(1) A periodic charge per telephone.....$....
(2) Charge for each call originated between 6 a. m. and 8 p. m..... ....cts.
(3) Charge for each call originated between 8 p. m. and 6 a. m..... ....cts.

In this system the time principle of cost operates in conjunction with the quantity principle. A system of this kind would be best applicable to a metropolitan city as it would have a tendency, if the night charge were small enough, to distribute the load over the whole period of the day.

By combining the two systems given above a third system may be formulated as follows:

(1) Charge per telephone from June 1 to October 1..$....
(2) Charge per telephone from October 1 to June 1..$....
(3) Charge for each call originated between 6 a. m. and 8 p. m..... ....cts.
(4) Charge for each call originated between 8 p. m. and 6 a. m..... ....cts.

In this system the time principle is operated in conjunction with both the demand and the quantity principles.

In the above examples the month and hour of the day are taken only as illustrations and not as actual data. In a practical application of either of the triadic systems of charges a thorough study of the time principle of cost would have to be made before the period of the season or day could be definitely designated.

Program of Indianapolis Convention.

Preparations are being made for a big meeting at the eighth annual convention of the Indiana Independent Telephone Association at Claypool Hotel, Indianapolis, September 16 and 17. The following program has been announced:

WEDNESDAY MORNING SESSION.

10 a. m.—Registration, Eighth floor, Claypool Hotel; Meeting executive committee, Room 740; Meeting convention committee, Room 740.

11 a. m.—Call to order; Roll call; Addresses of welcome, Hon. Samuel M. Ralston, governor of Indiana; Hon. Joseph E. Bell, mayor of Indianapolis, Ind.; Response, N. G. Hunter, president of the Association.

WEDNESDAY AFTERNOON SESSION.

2 p. m.—Meeting stockholders, The Toll Clearing Co., Room 740.

2:30 p. m.—President's annual address, N. G. Hunter, Wabash; Reading of minutes of last meeting; Report of secretary-treasurer; Accounting methods and reports required from telephone companies by the Public Service Commission of Indiana, with introductory remarks by a representative of the state commission; Appointment of committees; Resolutions and amendments; Credentials and membership; Auditing; Inspection of exhibits, Eighth floor.

WEDNESDAY EVENING.

7 p. m.—Banquet at Claypool Hotel.

THURSDAY MORNING SESSION.

10 a. m.—Address by Hon. Thomas Duncan, chairman Public Service Commission of Indiana; Uniform Methods of Toll Operating, by W. S. Vivian, secretary, Independent Telephone Association of America; Relation of Federal Authorities to Telephone Interests, by F. B. MacKinnon, secretary, National Independent Telephone Association; General discussion of Independent telephone interests in Indiana, open to all members.

THURSDAY AFTERNOON SESSION.

2 p. m.—Unfinished business; Appeals and references; Report of committees; New business; Election of officers; and Adjournment.

The present officers of the Association are as follows: President, N. G. Hunter, Wabash, Ind.; secretary-treasurer, Walter J. Uhl, Logansport; executive committee, N. G. Hunter, Wabash; Walter J. Uhl, Logansport; H. F. Farwell, Terre Haute; F. E. Bohn, Fort Wayne; J. A. Browne, Winchester; William Fortune, Indianapolis; F. R. Parrett, Princeton.

The following committees will have charge of the convention arrangements:

Reception and registration committee: John L. Hosea, chairman, Columbus; J. A. McGrayal, Morgantown; L. B. Morris, La Fontaine; G. Lutz, Shadeland; E. D. Allen, Shadeland; Geo. Watts, Knightstown; Karl B. Davis, Middletown; Martin Umbach, Fort Wayne; Daniel Agnew, Rochester; E. E. Daicey, South Bend; C. H. Green, Rising Sun; E. A. Tull, Lapel; F. S. Chapman, Greensburg.

Banquet committee: M. F. Hosea, chairman, Indianapolis; W. M. Bailey, Richmond; Claude R. Stoops, Nappanee; F. R. Strickler, Franklin; W. W. Washburn, Goodland; C. H. Webb, Washington; R. C. McCrary, Greenfield; C. V. Bennett, Indianapolis.

Committee on advertising and printing: H .F. Farwell, chairman, Terre Haute; F. R. Parrett, Princeton; F. E. Bohn, Fort Wayne; C. H. Webb, Washington; and F. O. Cuppy, LaFayette.

Program committee: N. G. Hunter, Wabash; William Fortune, Indianapolis; Walter J. Uhl, Logansport.

In extending an invitation to TELEPHONY's representatives to attend this convention, Secretary Walter J. Uhl writes: "The friendly interest evidenced by TELEPHONY in the past toward Independent telephone companies is remembered with much appreciation by those identified with Independent companies throughout the state of Indiana."

Initial Merger Negotiations at Austin, Texas.

J. E. Farnsworth, general manager of the Southwestern Telegraph & Telephone Co., recently visited Austin, Texas, at the invitation of Mayor A. P. Wooldridge, of that city, and told the city council that his company is disposed to put forth every reasonable effort to bring about a consolidation of the telephone systems in that city, provided it turns out that a majority of the people desire such a change. The Southwestern, he said, would not favor consolidation if any considerable body of the people opposed it. He asked the mayor, however, not to push the matter for three of four months, since in the present condition of the financial world, the Southwestern would not be prepared to make any expenditures of money that are not actually demanded by the business.

Michigan Independent Association Elects Officers.

The Michigan Independent Telephone & Traffic Association, at its annual meeting at Grand Rapids, Mich., elected the following officers: President, C. E. Tarte, Grand Rapids; vice-president, W. J. Melchers, Owosso; secretary-treasurer, F. V. Newman, Grand Rapids. The board of directors comprises the officers, and the following members, chosen at the same meeting: James C. McCabe, Bay City; W. H. Bahlke, Alma; J. F. Fitzsimmons, Reading; M. S. Wing, Grass Lake; R. C. Smith, Homer; E. T. Himebaugh, Burr Oak; W. B. Serviss, Saginaw; Thomas Bromley, Jr., Muskegon; C. E. Smith, Grand Rapids; E. B. Fisher, Grand Rapids; A. E. Wells, Grand Rapids and L. L. Conn, Owosso.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Clayton Anti-Trust Bill Passes Senate.

The Clayton anti-trust bill, to supplement the Sherman law, which will complete the administration trust legislative program for this session of congress, has passed the senate. The vote was 46 to 16. The passage of the bill ends the work of congress on anti-trust legislation, except for the approval of the conference report to come from the conference committees of the two houses on the Clayton bill and the trade commission bill.

The Clayton bill now goes to the house, where it is expected there will be a disagreement and a conference asked for. The measure will then go to the conference committee which now has the trade commission bill. Reports on both measures are hoped for within two weeks.

Referendum Petition in Waco, Texas.

As a result of opposition to the recent action of the city commission of Waco, Texas, in passing an amended ordinance providing for the consolidation of the Bell telephone system in Waco with the Independent system, the city commission has now received a petition asking that the matter be referred to a vote of the people. The petition, the circulation of which was authorized at a mass meeting of citizens, had 666 signatures. It has been referred to the city attorney for an opinion as to what steps the city commission may take.

Another Merger Step at Indianapolis.

Another move in the proposed unification of the Central Union Telephone Co. and the Indianapolis Telephone Co., was made when the Central Union receivers, Edgar S. Bloom, Frank F. Fowle, and John A. Moriarity, notified the Indiana Public Service Commission that they believed unification to be the only solution of the city's telephone problem and would be willing to stand by any fair and reasonable proposal that would meet the approval of the court for whom they are acting.

Ohio Joint Valuation Committee at Work.

A committee representing the various public utilities of Ohio has recently been in New York City in connection with the valuation of public utilities ordered by the Ohio Public Utilities Commission. This committee is composed of the following members: R. R. Stevens, representing the Ohio Independent telephone companies; Robert Lindsey of the Cleveland Electric Illuminating Co., representing the gas and electric companies; Allard Smith, representing the Cleveland Telephone Co.; Frank C. Dunbar representing the Ohio companies of the American Telephone & Telegraph Co., and E. W. Coen of the Lake Shore Electric Railway, representing the electric railways of Ohio.

By order of the Ohio commission every utility in the state must, before January 1, make and file with the commission a certified valuation of all its property. The utilities selected the foregoing committee to arrange schedules and to formulate methods of valuation. Its members have been in consultation with the leading public utility engineers of New York and with those of the American Telephone & Telegraph Co., and have nearly completed the work to which they were assigned.

This will be the first complete valuation of the utilities of an entire state and it is expected that its results will constitute standards that will be useful in other states. The valuations made will be used as bases for rate making proceedings and issues of new capital.

The cost to the utilities of making these valuations will be large, it being estimated that it will cost the subsidiaries of the American Telephone & Telegraph Co. in Ohio not less than $200,000 and that on the average the cost will be not less than 1 per cent. of the valuation. Final sessions of the committee will be held in Cleveland and its members expect soon to have the schedules ready to submit to the utilities and to the commission for approval.

Appeal in Fort Dodge Litigation.

Legal questions of considerable interest to telephone companies in Iowa are involved in the litigation in progress between the city of Fort Dodge, Iowa, and the Fort Dodge Telephone Co. A phase of this case has been appealed to the state supreme court and is set down for hearing, it is stated, in May, 1915.

In 1898 the citizens of Fort Dodge voted a franchise to the Fort Dodge Telephone Co. under the terms of which rates were never to exceed $24 a year for business telephones and $12 a year for residence telephones. The company, finding these rates inadequate, raised them to $36 a year for business and $24 a year for residence telephones, with 25 cents discount for prompt payment of bills.

The Fort Dodge Telephone Co. purchased its system in Fort Dodge from the Iowa Telephone Co. and claims to be operating under the franchise of the latter company and that its rates are not restricted to those named in the 1898 franchise. It declares that the only effect the latter franchise had was to permit the company to erect poles and wires. It denies that the city of Fort Dodge had any authority from the state to fix the rates for telephone service, and that therefore the clause in the franchise stating what rates should be charged is void.

The city of Fort Dodge claims that the franchise fixing the rate for service was passed in good faith, was accepted by the telephone company and constitutes a contract which cannot be violated. It is said that this question will be determined by the district court in Fort Dodge but that the supreme court may consider practically the entire case on its merits. The appeal to the supreme court, however, is on the question whether Judge J. L. Kamrar erred when he set aside a temporary injunction restraining the telephone company from refusing service to patrons who would not pay the rates put in effect by the company. The telephone company is under $25,000 bond to refund to subscribers the excess charges, if the supreme court determines that the company is bound by the terms of its franchise.

Bell Company Secures Spokane Franchise.

The city council of Spokane, Wash., has passed the ordinance giving the Pacific Telephone & Telegraph Co. a new franchise for 25 years and the ordinance has been formally accepted by the company. The ordinance provides for a new business rate, two-party unlimited, $4 a month; a reduction of the present one-party measured service business rate from $4 a month to $3 a month, and an increase of calls from 80 to 100 a month; excess calls 2½ cents. It provides a reduction of the unlimited one-party

residence rate from $3 to $2.75 a month; a reduction of the unlimited two-party residence rate from $2.50 to $2.25 a month, a new four-party residence rate prepayment nickel in the slot, five cents a day guarantee, incoming calls free; sixth, all rates to apply equally within the city limits without extra mileage charges beyond the two-mile radius from Riverside and Howard. The ordinance contains the further provision that the city shall have the right to condemn the company's property and take it over in five years or at five-year periods thereafter.

George S. Brooke of the bondholders' protective association, representing the holders of $160,000 of the $400,000 bonds of the Home telephone company, not owned by the Bell interests, told the city council that satisfactory assurances of protection of his organization's interests had been given by the Pacific company and he gave consent for the cancellation of the Home company's franchise.

C. B. Hopkins, general agent of the Pacific company, agreed that his concern would take on the switchboard of the fire department and connect it direct with his exchange without extra cost to the city, and that the trunk lines to be used will be additional to the 100 granted to the city. This was a point for which one commissioner had made a hard fight throughout the time that the franchise was under consideration.

Washington Commission Rules for Running Leads.

Following a recent hearing at Seattle, Wash., as to wiring for power, telephone, telegraph and lighting companies and protection at the crossings of their leads and at railroad crossings, the Washington Public Service Commission has now issued a set of rules supplementing the provisions enumerated in the act passed by the last legislature.

Financial Status of Telephone Companies in Michigan.

Figures compiled by Charles B. Hall, telephone engineer for the Michigan Railroad Commission, show that out of the 315 companies in the state furnishing telephone service, only 48 say they have made money. The commission says that of the 48 but few really made money, for only two or three of them make any charge for depreciation. According to Mr. Hall's figures the state of Michigan has a telephone for every 116 people.

New Maryland Commissioner Appointed.

W. L. Henry, of Dorchester County, Maryland, has been appointed a member of the Maryland Public Service Commission to succeed Philip D. Laird, former chairman, resigned. Mr. Henry will take office at once and will serve about 18 months to complete Chairman Laird's unexpired term. Commissioner Towers will serve as chairman of the commission.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

August 18: Application by The Fowler Independent Telephone Co., operating in the vicinity of the town of Fowler, Fresno County, for authority to issue 50 shares of common stock. The prceeeds will be used to meet outstanding indebtedness and to provide extensions for the system.

September 8: Hearing to be held at Bakersfield, Cal., in the case against the Pacific Telephone & Telegraph Co.

INDIANA.

August 26. Hearing at Bedford on petition of Bob Owens for a revision of rates, elimination of alleged discrimination and an improvement of the toll service of the Central Union Telephone Co.

August: Commissioner McClure of the Indiana Public Service Commission has taken under advisement the petition of Robert Owens, of Bedford, Ind., asking for a readjustment of the rates of the Central Union Telephone Co., at Bedford, on the ground they are excessive. The Central Union at Bedford absorbed the Home Telephone Co. about four years ago, and it is charged the rates have since been raised to their present level. Commissioner McClure is finding it hard to determine the valuation that should be placed upon the property. There is $30,000 difference between the value the company claims, and the value the commission believes fair.

August: In order to carry out the decision of the Indiana Public Service Commission, granting the Farmers' Mutual Telephone Co. long distance connection out of Lagrange, Ind., with the Central Union Telephone Co., the stockholders at a recent meeting decided it would be necessary to raise the rate to $8 a year. The commission will be consulted.

August: The hearing on the petition of the Central Union Telephone Co. for an increase of rates in Elwood, Ind., was held before Commissioner McClure, who held the company wrong in asking higher rates, and dismissed the petition.

September 8: Postponed hearing at Columbus, Ind., on the petition of the Citizens Telephone Co., of Columbus, Ind., for permission to raise the rates from $1 to $1.50 a month.

MISSOURI.

September 9: Hearing at Jefferson City, Mo., at which officials of the Southwestern Telegraph & Telephone Co. will have an opportunity to interrogate the commission's experts as to their valuation of the St. Louis exchange.

NEW HAMPSHIRE.

September 8: Investigation at Concord to determine whether the New England Telephone & Telegraph Co. and various of its subsidiaries are complying with the provisions of chapter 141 of the laws of 1909, which statutes provide that persons residing within 500 feet of any telephone company shall be entitled to service for three months or more at the regular rate per month for yearly service plus 15 per cent. and the annual cost of installation. Complaints have come to the commission from several parts of the state to the effect that the New England companies, by insisting upon the performance of onerous conditions, and by making excessive installation charges, have made this statute practicably unworkable.

NEW YORK.

September 22: Hearing to be held in New York respecting the metropolitan rates and appraisal of the property of the New York Telephone Co.

OHIO.

September 16: Postponed hearing at the request of the Central Union Telephone Co. on the company's protest on the valuation of its Lancaster property as fixed by the commission. The complaint arose out of the complaint of the city of Lancaster against the increased business rates established by the telephone company, effective on July 1.

OKLAHOMA.

August 31: Hearing on complaint by the Roger Mills County Telephone Co., of Cheyenne, Okla., against the Hammon Central Telephone Co., of Hammon, Okla., alleging that the latter company is violating the order of the commission of July 13 last. This order directed the defendant company to permit the complainant to connect with its clear line at Cheyenne for Strong City.

OREGON.

August 19: Order authorizing the Siuslaw Home Telephone Co., of Florence, Lane County, to increase certain rates over those in effect on January 1, 1911. It was found that the investment in the plant is $6,000. The revenues for the year ending June 30, 1914, amounted to $1,850 and the operating expenses and taxes to $1,760. The net revenues from operation amounted to $90 for depreciation and return on the investment. One party business rates are increased from $2 to $2.50; two-party business rates from $1.50 to $2; four-party business rates from $1.50 to $1.75. Two-party business rates are raised from $1.50 to $1.75; four-party residence rates from $1 to $1.50; and 10-party residence from $1 to $1.25. Toll rates between Florence and Gardiner are increased from 25 cents for any conversation or message without limit of time to 25 cents for the first 2 minutes and 10 cents for each additional minute.

WISCONSIN.

September 15: Hearing at Madison on the application of the West Menasha Telephone Co., of Menasha, Wis., for authority to increase rates.

September 16: Hearing at Madison on the application of the Glidden Telephone Co., of Glidden, Wis., for authority to increase rates.

September 16: Hearing at Madison in the case of A. J. Edminster & Co., et al. vs. the Chippewa County Telephone Co., Cornell Telephone Co., of Cornell, Wis., and the Wisconsin Telephone Co.

September 17: Hearing at Madison in the case of Arthur V. de Neven vs. the Wisconsin Telephone Co. and the Farmers Telephone Co., of Wyocena.

From Factory and Salesroom

Convention: Indiana Independent Telephone Association, Indianapolis, Sept. 16, 17

The F. Bissell Company's Salesmen Convene.

Coming from Ohio, Michigan, Indiana, West Virginia, Western New York and Pennsylvania and parts of Illinois and Kentucky, 30 or more salesmen of The F. Bissell Co. have gathered at Nela Park, Ohio, to take part in the semi-annual salesmen's conference which this year is being held from September 3 to September 7. Those men whose sales have amounted to their yearly quota journeyed to Cedar Point and spent one day in fun and frolic. From Cedar Point they went to Nela Park where the general sales conference is being held, at which matters of interest to the customers, salesmen and the house are being discussed. While these meetings mean the discussion of serious subjects, there is at the same time no lack of enjoyment and sport. Sleeping in tents, playing tennis, base ball, quoits, etc., and swimming and bathing are a few of the many pleasures being enjoyed. The entire conference is being held in the open or under canvas if the weather is bad.

Kennedy Metal Kits.

Prepared steel kits and carrying bags for the use of telephone repairmen, electrical workers, mechanics, and others who give a grip hard usage, are shown in the accompanying illustrations. These are no heavier than other bags and suitcases, their average weight being between five and seven pounds. They are reinforced throughout and protected with solid corner irons, to stand hard usage. They are fitted with brass side catches, strong Corbin locks, and wire leather-covered handles. One of the illustrations shows a fiber and aluminum tray for screws, nuts and small parts, which fits inside the metal kit.

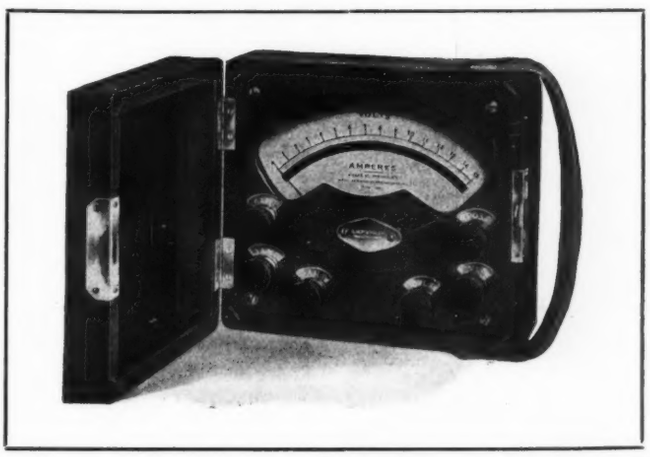
These steel carrying bags are finished in durable brown or black enamel and look like leather traveling bags or suit cases. The bags have several obvious advantages for the service intended. Sharp or pointed tools can be carried without danger of piercing sides or bottom and heavy material can be carried without buckling or changing the shape of the bags, which are further declared to be water proof, fireproof, oil-proof, and weatherproof. They are also thief-proof because they can be locked, chained if

Steel Kit Showing Screw Tray.

desired, and cannot be cut open. These kits are manufactured at Fort Wayne, Ind., by the Kennedy Mfg. Co., of 14 E. Jackson Boulevard, Chicago, Ill.

A New Portable Meter.

A new direct current portable voltmeter and ammeter 6 in. x 5¼ in. x 3⅛ in. in size, and weighing less than three pounds, is just being brought out by Louis M. Pignolet, manufacturer of electrical measuring instruments, 78 Cortlandt street, New York. This meter has been given the same adjustment for resistance measurements that makes the Pignolet pocket meters so useful in telephone testing, for locating trouble, etc. The instrument is of the deadbeat, moving coil type, with a permanent magnet, and movement especially designed to



New Direct Current Portable Volt-Ammeter.

secure the compactness and light weight obtained, without sacrificing reliability and durability.

Because of its small size and weight the meter is especially convenient for outside use, but is declared to be equally serviceable for shop and laboratory testing. That its compactness and light weight are not secured at the expense of its electrical qualities is indicated by the fact that the resistance of the voltmeter in the volt-ammeters is high for such an instrument, being about 80 ohms per volt, and the temperature error of the ammeter is small. The accuracy is declared to be ½ per cent. for voltmeters, and 1 per cent. for the ammeters, which is ample for all ordinary measurements. The voltmeters have practically no temperature error, but the ammeters have a small error as is usual in instruments of the type. Ammeters up to 62½ amperes ar self-contained, but above this will be furnished with outside shunts on special order.

The scale is 4½ in. long, and has 100, 125 or 150 divisions, according to the range. A mirror is provided to avoid parallax errors when making readings; also a zero adjuster on the outside of the case by which zero errors, if any, may be corrected. The instrument thus contains all the features usually found only in the most expensive meters.

The elimination of switches in the volt-ammeters adds to the simplicity and reliability of operation. One of the binding posts is positive, and the different readings are obtained by connecting the negative terminal to the proper binding post, all of which are plainly marked.

The case in which the meter is carried has an unusually attractive appearance, and is of dull finished black walnut with a carrying handle of superior quality leather which is flexible without being soft. The cover closes over the binding posts and protects them as well as affords a place for cables, etc., when the meter is being carried. At the same time, special hinges permit the cover to be easily removed if desired, thus giving the convenience of a meter without a cover when the instrument is being used.

New Kellogg Sales Engineer.

One day long ago, Ormond F. Cassaday, while working with an installing crew was caught reading "The Duke's Revenge." From that time on Mr. Cassaday has been "Duke" to his many friends in the telephone field. Here is a man who would get into the telephone business in spite of even parental objections! At 15 he was attending the Collegiate Institute, of Detroit, and became interested in electric lighting. He spent most of his afternoons at the theater, close to the switchboard. His parents thought him a scholar, but he was in his own way, for learning his chosen profession. He was 15 years old when he took a job with the Michigan Electric Co., of Detroit. From there he went to London, Canada, where he worked on telephone construction for a year.

Mr. Cassaday believed in the value of a wide experience, and at Sarnia, Canada, he was employed later by the Sarnia Street Railway & Electric Lighting Co. After this, while with the Canadian Bell Telephone Co., he helped in a large common battery cut-over—his first serious telephone experience. That was at London, Canada. From there he went to the Central Union company, at Columbus, Ohio, on installing work. Mr. Cassaday gained a wide experience in switchboard maintenance in 1901, when working for the People's Telephone Co., Akron, Ohio. After this, he was manager at Cuyahoga Falls, in which place he remained until 1906.

Ormond F. Cassaday.

An offer to take up work in the engineering department of the Western Electric was accepted, but Mr. Cassaday soon returned to Akron and worked at an automatic cut-over. From here, he went to Cleveland, on switchboard reconstruction, and in 1907 was made assistant superintendent of equipment. He next moved to Detroit on equipment inspection and toward the close of 1908, to Kansas, on engineering propositions, and rebuilding telephone plants. A year later found him back in Ohio working for the United States Telephone Co. on estimates and appraisals in various parts of the state. While engaged in this work, Mr. Cassaday took a considerable part in the reconstruction of central office equipment. It was in 1910 also, when with the United States Telephone Co., that he did a great deal of estimating and appraisal work and special engineering in connection with automatic work and automatic long distance calling.

In 1912, Mr. Cassaday was promoted to the position of superintendent of equipment of the United States Telephone Co., at Columbus. It was about this time that he was given charge of the job of moving a 14-position toll board at Toledo out of the third story of one building into the second story of another building a block away, without the use of any new apparatus except cabling and without loss of service. The only additional equipment used was some borrowed relays for the cut-over.

At Columbus "Duke" had charge of the maintenance of the central office and toll equipments of the United States Telephone Co. and subsidiary properties. He also made transmission studies and rebuilt toll and central office equipments throughout the state, increasing the service and transmission efficiency. At this time, he was given special consulting engineering work for the Jackson Home Telephone Co., and The Hillsboro Home Telephone Co.

Mr. Cassaday, in 1906, married Miss Isabelle Thomas, of Cuyahoga Falls. Their home has been in Columbus, but Mr. Cassaday plans to make Chicago his headquarters, representing the Kellogg Switchboard & Supply Co., as sales engineer.

First Cargo Through Panama Canal Includes Locust Pins.

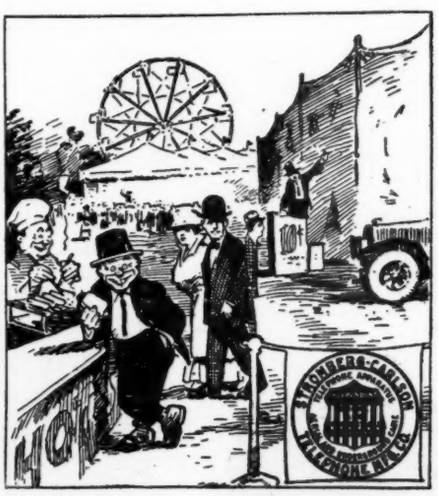
J. Alexander Navarre, Spitzer Building, Toledo, Ohio, dealer in poles, crossarms and pins, enjoys the distinction of having shipped a carload of locust insulator pins from a mill in Pennsylvania to a San Francisco distributor. It formed a part of the cargo of the "Missourian," the first merchant vessel to pass through the Panama canal. TELEPHONY's readers who handle locust pins will be pleased to know that one of the important items in telephone construction helped make the first cargo that passed through the canal and on which tolls were collected.

Another Instance of Long Battery Service.

Speaking of long battery service, Karl Dekaw, wire chief of the Bryan Telephone Co., of Bryan, Ohio, believes that the following record will be hard to beat. He writes: "I put in two dry cells, No. 6 Columbia batteries, in the telephone of E. C. Peck, county probate judge, on April 14, 1906, and changed then on November 26, 1913. They lasted 7 years, 7 months and 12 days."

An Invitation from Phoney Bill.

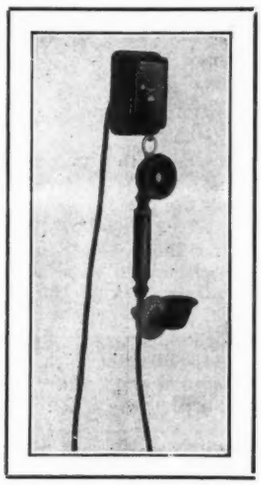
"Walk up, tumble up—any way to get up; if you can't get up any other way, fall up." "The cane you ring is the cane you get and the cane you carry away." These may be the cries that assail Phoney Bill's ears this month, but the "red hot" counter looks good to him, judging from the accompanying illustration from the September calendar blotter of the Stromberg-Carlson Telephone Mfg. Co. Phoney Bill will be on the job as host during the two weeks of the Rochester Exposition and extends the glad hand to all of his friends who may visit Rochester. "Welcome to Rochester," says Phoney Bill. "Something doing every minute."



Phoney Bill at the Rochester Exposition.

Paragraphs.

SMITH & HEMENWAY, Co., 150 Chambers street, New York City, manufacturers of "Red Devil" tools and hardware specialties, is sending out an illustrated net price list for the convenience of its customers.



One of your subscribers would like to answer his telephone call without getting out of bed:

Another does not wish to go down stairs to answer his:

Neither does the man talking to a customer like to go to the rear of his store to answer a call:

Anyone knows it's a confounded nuisance to get up from a desk, go to a wall telephone and stand while holding an important conversation.

Show each one of these men a Handmike Extension Set and they will order it put in at once, paying extra rent for it at a profit to you.

It costs less than a desk set and not half as much to keep in order, and besides,—

You can use it where you can't a desk or wall set, and to much better advantage than either of these.

ERICSSON MFG. COMPANY

1102 MILITARY ROAD :-: :-: :-: BUFFALO, N. Y.

OTHER BRANCHES AT

Atlanta, Ga., 83 Marietta St.
Boston, Mass., 451 Atlantic Ave.
Birmingham, Ala., 3 No. 20th St.
Butte, Mont., 53 East Broadway.
Cedar Rapids, Iowa, 215 So. Second St.
Chicago, Ill., 14 N. Franklin St.
Cleveland, O., 124 St. Clair Ave., N. E.
Edmonton, Alta., Can., 504 Agency Bldg.
Havana, Cuba, P. O. Box 6.
Indianapolis, Ind., 124 So. Meridian St.
Jacksonville, Fla., 24 W. Forsythe St.
Lincoln, Neb., 136 So. 10th St.
Los Angeles, Cal., 1233 So. Olive St.
Louisville, Ky., 514 W. Main St.
Minneapolis, Minn., 19 N. 6th St.
New Orleans, La., 810 Canal St.
Pittsburgh, Pa., 31 Terminal Bldg.
Portland, Ore., 329 Ankeny Ave.
Richmond, Va., 5 Governor St.
San Francisco, Cal., 530 Golden Gate Ave.
Spokane, Wash., Paulsen Bldg.
Toronto, Canada, 36 Adelaide St.

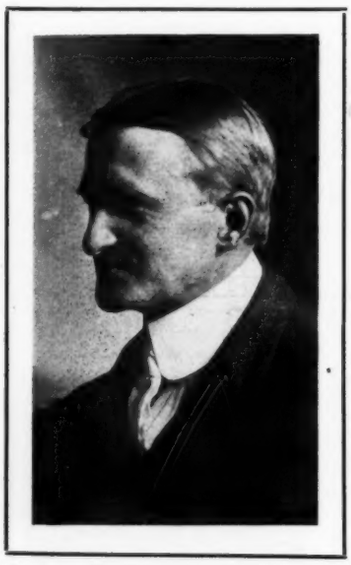
Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

FOREST S. LYMAN, formerly associated with the Kinloch Telephone Co., of St. Louis, Mo., is now connected with the Interstate Commerce Commission as senior telegraph and telephone engineer, with headquarters at Kansas City, Mo.

G. W. CUMMINGS, who has had about 20 years of experience in the telephone field, has been appointed city telephone supervisor of Chicago, succeeding Bert H. Peck, who resigned to accept a position on the engineering staff of W. J. Hagenah. Mr. Cummings began his telephone career with the Chicago Telephone Co. in 1895, and left that company three years later to enter the service of the Kellogg Switchboard & Supply Co. While with this company he assisted in the building and installation of the first switchboard for the New Telephone Co., of Indianapolis, Ind. This board was probably the largest ever installed with local battery talking and express signaling, and was a unique experiment in many ways.



G. W. Cummings.

In 1899 Mr. Cummings again became associated with the Chicago Telephone Co. and was active in the development of the common battery system, being in charge of one of the first exchanges to be cut over. In 1901 he returned to the Independent field, taking charge of the plant and traffic of the Mutual Telephone Co., with headquarters in Shelbyville, Ind. Two years later he again became connected with the Chicago Telephone Co., and after serving in various capacities in the plant department, in 1906 he organized the plant department school. This, under his enthusiastic supervision, has developed, as a clearing house of practical telephone information, into the largest and most successful institution of its kind in the world.

In connection with the development of the plant school, Mr. Cummings brought out and published a book under the title, "Electricity and Magnetism in Telephone Maintenance," which is especially adapted to the needs of the student or beginner in telephone work.

In assuming charge of the telephone bureau of Chicago, Mr. Cummings plans to make the bureau as valuable in a practical way to the telephone using public and their representatives in the city council, as the plant school is to the employes of the Chicago Telephone Co. His many friends in the Chicago Telephone Co. and other telephone companies wish Mr. Cummings all possible success in his new field.

J. GIBSON has been appointed manager for the British Columbia Telephone Co. at Greenwood, B. C., Can.

H. C. BRASFIELD, formerly of Memphis, Tenn., is the new manager of the Posey Home Telephone Co., Mt. Vernon, Ind.

E. C. SMITH, of Calvert, Tex., has assumed his duties as manager of the Calvert exchange of the Southwestern Telegraph & Telephone Co.

J. FAIRFIELD has been transferred by the Nebraska Telephone Co. from Ashton, Neb., where he has been local manager, to Litchfield, where he will take charge of the exchange.

W. H. BADOUR, of Kalamazoo, Mich., has succeeded T. S. Humphries as manager of the Dowagiac, Mich., exchange of the Michigan State Telephone Co. Mr. Humphries resigned as a result of ill health. Mr. Badour has had a telephone experience of nearly 30 years, almost all of this having been with the Michigan State Telephone Co. He was manager of the St. Joseph, Mich., exchange for 18 years.

JAS. A. HEBERT, has been promoted from the position of district plant supervision of the Evansville district of the Cumberland Telephone & Telegraph Co., to the office of the chief engineer, at Alanta, Ga.

P. J. MARTIN, formerly wire chief for the Central Union Telephone Co., at Bowling Green, Ohio, has been appointed manager of the Wood County Telephone Co., taking the place of C. R. Lockwood, recently resigned.

H. G. WOODWARD, for the past three years, manager of the Missouri & Kansas Telephone Co., at Trenton, Mo., has been promoted to a position in St. Joseph, in the offices of C. A. Cook, division commercial superintendent.

New Companies.

CROCKET, KY.—The Hutchinson Telephone Co. has filed articles of incorporation with $225 capital stock. The incorporators are J. E. Ferguson, Robt. Gilliam, T. P. Conley and others.

FRANKFORT, KY.—The Duncan Farmers' Telephone Co. has been incorporated with a capital stock of $3,500 by W. I. Massie, G. B. Poulter and John E. Sims.

MONTICELLO, KY.—The Duncan Valley Telephone Co. has filed articles of incorporation with $750 capital stock. The incorporators are F. F. Cooper, J. H. Edwards, William Lyons and others.

MCIVOR, MICH.—The Iosco & Arenac County Telephone Co. has been organized with a capital stock of $1,500. The stockholders are Wm. Kohn, Algert Drayer, of Turner, Mich., Walter H. Pringle, of Emery, and others.

WHITESBURG, MICH.—The Citizens Telephone Co. has been organized with $3,000 capital stock. The incorporators are Stephen Combs, J. T. Smith, John Ison and others.

DYER, WASH.—The Dyer Telephone Co., has filed articles of incorporation with $2,000 capital stock. The incorporators are H. C. Hoover, W. M. Yockey and others.

Construction.

HANFORD, CAL.—The Pacific Telephone & Telegraph Co. has commenced work on improvements to its local service, which will entail an expenditure of $5,000.

LAKELAND, FLA.—The Peninsular Telephone Co., with headquarters at Tampa, Fla., is making radical improvement in its plant in this city. A complete common battery system will be installed and all wires in the business and residence sections will placed underground. An extension of the franchise will be asked to enable the company to borrow money to carry out these improvements.

ANDERSON, IND.—Plans are being drawn by the Central Union Telephone Co. for extensive improvements to its local exchange. It is estimated that the improvements will cost in the neighborhood of $50,000.

MERIDIAN, MISS.—The Mississippi Home Telephone Co., which recently moved its headquarters from Jackson to this city, is completing plans for the erection of a new exchange building, which it is expected will be completed by December 31, of this year.

LONGVIEW, TEXAS.—The Southwestern Telephone Co. is preparing to make improvements to its local exchange and will also construct toll lines into the surrounding country.

SUPERIOR, WIS.—The Wisconsin Telephone Co. has completed plans for the construction of a new three-story exchange building in this city, which will be the largest in the state outside of Milwaukee.

Underground.

ROCK ISLAND, ILL.—The Central Union Telephone Co. has made application to the city council for permission to install underground conduits.

Miscellaneous.

ADDISON, N. Y.—The Addison Home Telephone Co. has purchased the holdings of the Steuben & Pennsylvania Telephone Co., operating in the towns of Woodhull and Elkland, N. Y.